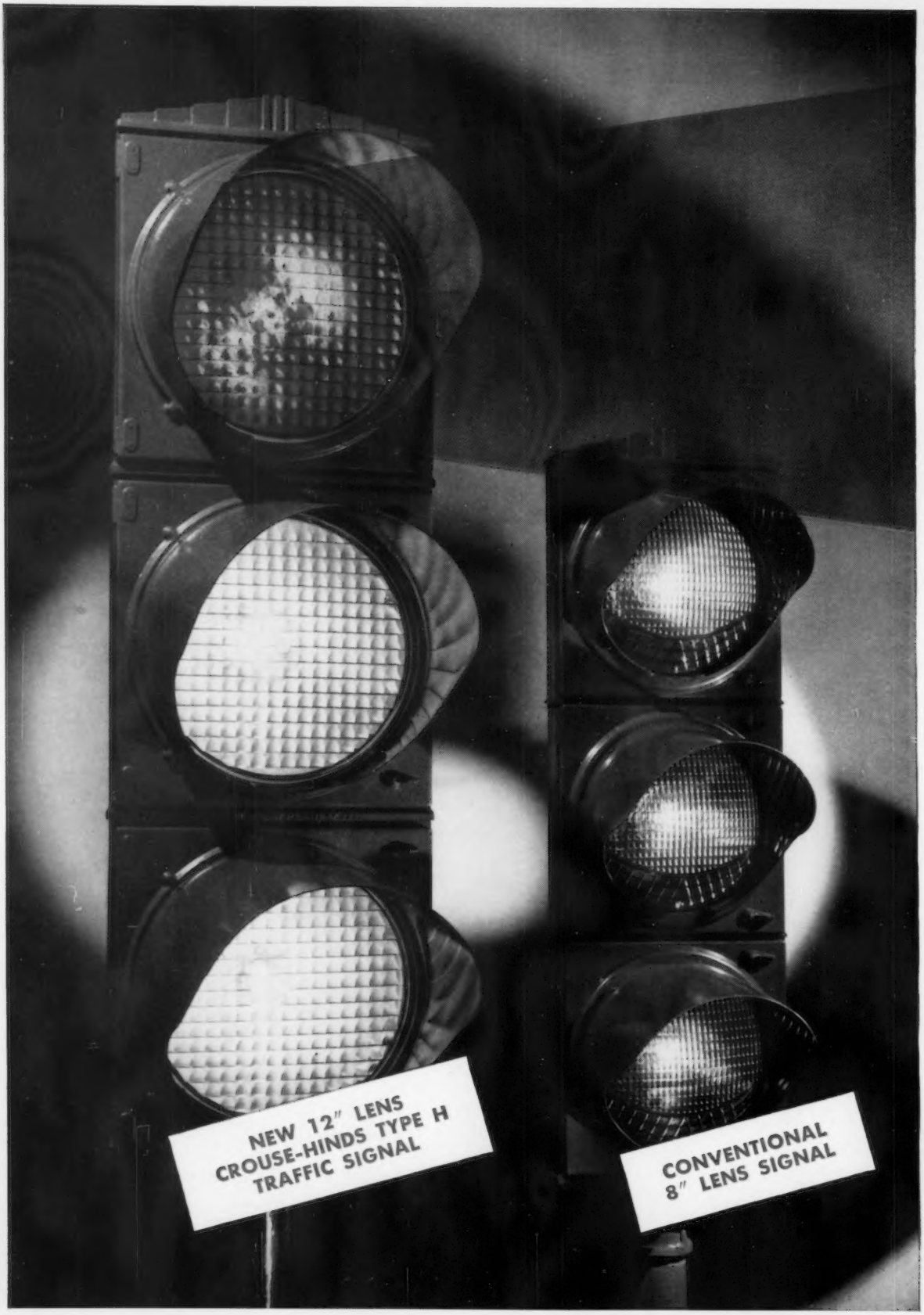
MARCH, 1955

Traffic Engineering

A Department Store's Parking Garage at Hartford, Connecticut

- Customer Self-Parking
- The Traffic Engineer and Transit
- Highway Modernization Trends in the United States

Official Publication of the Institute of Traffic Engineers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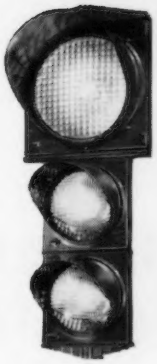

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Traffic Engineering

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COVER: The G. Fox Parking Center, a six-story continuous ramp type garage built in 1953 by G. Fox and Company, Inc., Hartford, Connecticut. Reputed to be the largest department store between Boston and New York, the company built this 650-space garage on land leased from the city, deeded it back to the city and then leased it back for 20 years. This facility was the site of the study described in Mr. Burrage's article "Customer Self-Parking." The picture was taken from atop the 12-story Fox store. The Connecticut River flanked by the North Meadows expressway is in the background.

DEFINITION: Traffic Engineering is that phase of engineering which deals with the planning and geometric design of streets, highways, and abutting lands, and with traffic operation thereon, as their use is related to the safe, convenient, and economic transportation of persons and goods.

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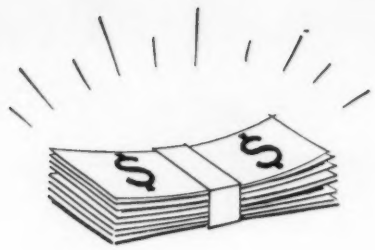

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Frankly Speaking

THE DECENTRALIZATION of certain types of business is inevitable. We must realize however, that the high density, multi-story conditions of our central business districts are ideal for many kinds of business enterprises. Today's changing complexion of our central business districts can be for the better if we encourage the right type of business to grow and expand to fill vacancies left by *logical* decentralization.

Accessibility is accepted as the key to the attainment of the goal of healthy central business districts. To this end, most large cities are:

1. Building facilities to bypass through traffic that has no downtown destination.
2. Creating systems of perimeter circulation streets in their downtown areas.
3. Providing additional downtown off-street parking space.
4. Improving public transit service to encourage more people to use transit.

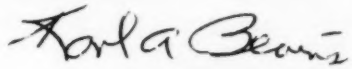
Economic and physical factors impose definite limits on the extent to which the first three of these items can increase the accessibility of our downtown sections. Mass transportation offers the most productive means of providing for increased accessibility to our central business district. A comparison of the safety, economy and convenience factors in mass transportation indicates that the convenience factor is weak.

Further study of ways to improve the popularity of mass transit indicates that speed is the most important single component of the convenience factor. This speed component is also the one which is currently suffering most. Virtually every move to improve traffic conditions attracts more automobiles. Usually, this either results in no significant improvement in transit speeds or in an actual reduction in transit speeds.

The importance of transit to our central business districts is generally recognized. Municipal governments and other regulatory bodies are realizing that they must give more active assistance and cooperation than they have in the past. The various agencies of our federal, state and municipal governments, which are pledged to the development of means to provide for the transportation of persons and goods, have found that it is entirely consistent with the aims of good government to assist the transit industry in its efforts to improve the popularity of transit.

The progressive traffic engineer is assuming a more aggressive role in the employment of the advantages offered by mass transportation. Some of the more promising ideas towards achieving faster and more free movement of transit vehicles include:

1. More direct routing to reduce turning movements and bring the rider closer to his destination.
2. Special transit lanes on main arteries reserved for the exclusive use of transit vehicles.
3. Streets reserved for the exclusive use of transit vehicles with automobiles using adjacent streets.
4. The incorporation of rapid transit lanes in expressway construction.
5. Fringe parking developments in order to free "close-in" downtown parking spaces from all-day parking and reserve it for shoppers, businessmen and other short-time parkers.
6. Staggered working hours, which will reduce the peak traffic loads on the streets.
7. Restrictions on the location of multi-story garage construction to prevent the overloading of key transit routes.
8. Additional restrictions for on-street parking and truck loading and unloading which conflict with transit movement.



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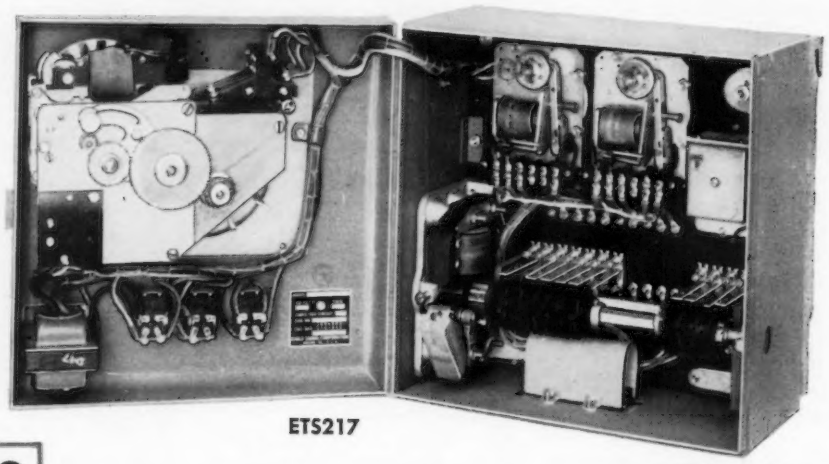

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Customer Self - Parking

By R. H. Burrage (Assoc. Mem., ITE)

Head, Terminal Facilities Unit, U. S. Bureau of Public Roads, Washington, D. C.

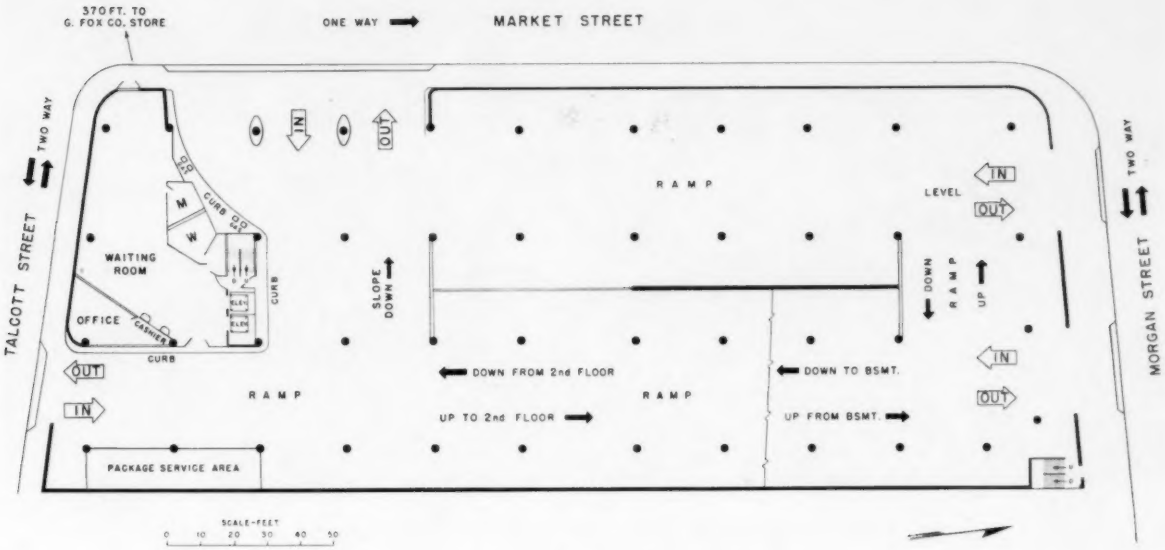


Fig. 1
Location and layout of the G. Fox Co. garage in Hartford, Connecticut.

(This report describes an operational spot study at the G. Fox & Co., Inc. garage in Hartford, Connecticut, in June, 1954. The report was presented at the January meeting of the Parking Project Committee of the Highway Research Board, as a part of its program of operational studies.—EDITOR.)

THE G. FOX PUBLIC PARKING CENTER, built in 1953, is the continuous ramp type, its rectangular spiral ramp giving the equivalent of six levels, including the basement and roof. It occupies a site approximately 310′ x 118′, located about 370 feet from the side entrance of the G. Fox & Company store (reputed to be the largest department store between Boston and New York) and has 650 spaces. As indicated in Figure 1, the ramp section occupies about three-quarters of the length of the building, being supplemented by a level area at the southern end on each floor. On the ground level this area is devoted to the waiting room, cashier's office, rest rooms, package service and gasoline service. The principal entrance is on Market Street, which is a one-way street, with accessory entrances on Talcott Street and on Morgan Street (serving the ground floor and basement). Most departures are made via Talcott Street, adjacent to the package service counter. The reservoir space at the three entrances will accommodate a total of about 20 cars with room for six more in the ground floor aisle. (Figure 2.)

The ramp (except at the ends) is 57½′ wide (Figure 3) with 90° parking on each side, has two-way travel and has a gradient of five percent on the first rise and four percent on the upper levels. The clear space between columns averages 26′2″, allowing three stalls per bay, each 8′8″ wide. The ground floor and basement have clear heights of 12.5 feet and 10.5 feet respectively (to accommodate Fox Co. trucks), and the upper levels have a minimum clearance of 7′6″. All parking is by the car drivers and all floors are served by two push-button elevators, although many parkers using the second level prefer to walk down the ramp. In this connection it is suggested that a minor improvement on the upper levels might be the use of more prominent signs indicating the location of the elevators.

Under normal conditions two or three attendants are used to issue and collect tags, plus one or more on upper levels to direct parking. The tag procedure is explained by Figure 3.

The garage is open six days a week 8 A.M. to 8 P.M. (sometimes later on Saturday) and the Fox store hours are 9:30 A.M. to 6 P.M. (closed on Mondays). For the convenience of its patrons the store operates a package service whereby, at 30-minute (or less) intervals a store jeep delivers purchases to the garage, where they are assembled in numbered bins for quick location. Figure 4 shows the identification system. The package service center has handled more than 1,100 packages in a day and averages about 150.

The garage was built on city-owned land by the G. Fox Company, which leased the land from the city, built the garage, deeded it to the city, and then took it back on a 20-year lease. The construction cost was about $1,700 per space, including some elaborations in the waiting room and a higher-than-usual clearance for the ground floor and basement. Operation, for the G. Fox Company, is by the American Garages, Inc., an operating subsidiary of Ramp Buildings Corporation.

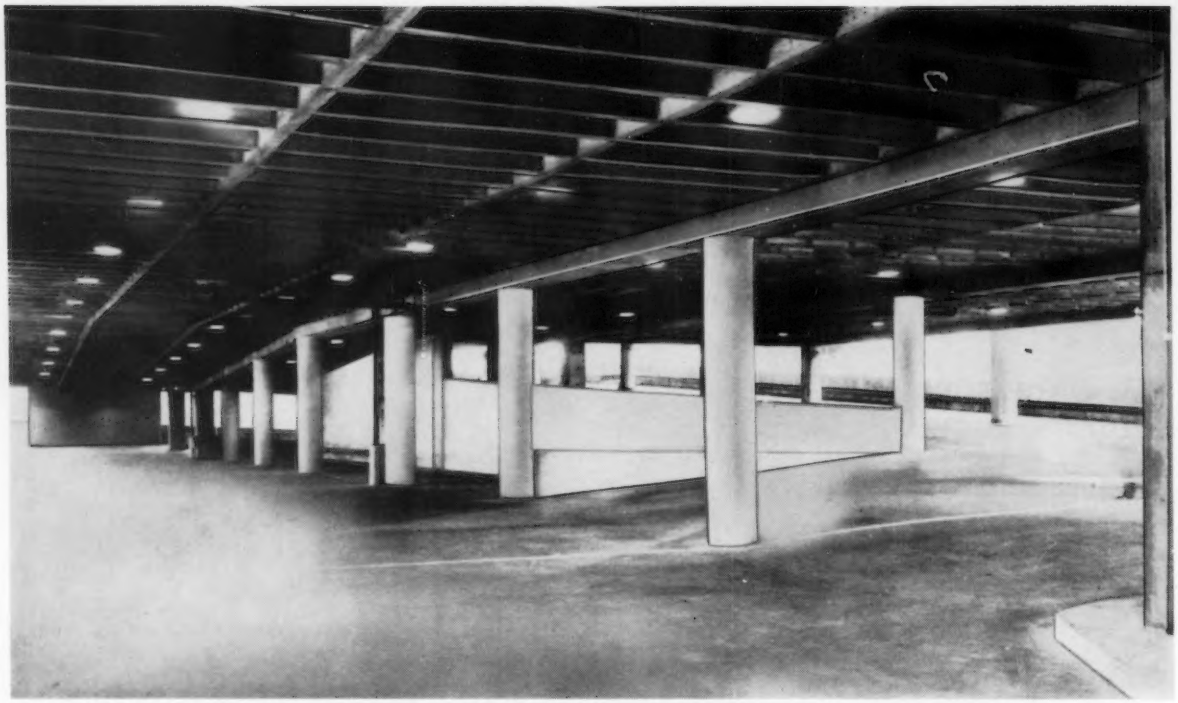


Fig. 2
Reservoir space and start of ramp, from location of gasoline service area.

The Fox garage is one block from the principal business street of Hartford (Figure 5), and is at the eastern edge of the central business district. Other department stores are nearby on Main Street, and there are many smaller specialty shops for several blocks to the west. This study was desirable because of the fact that the city was in process of building a somewhat similar, self-parkng garage, about a block and a half west of Main Street, to be opened in December, 1954. Up to this time a study of this type was not available as a planning guide for this important project.

Garage Usage

A study was conducted from 10 A.M. - 6 P.M. on June 18 - 19, 1954, using six observers provided by the city, the State and the Bureau of Public Roads. Ticket stubs for the two days were made available for analysis. On Friday, June 18th only 368 vehicles used the garage, with a peak accumulation of 120, or only 18 percent of capacity. The peak arrival rate was only 19 in 15 minues, or one car every 47 seconds. On Saturday, June 19th, 991 vehicles used the garage and the peak accumulation was 355, or 55 percent of capacity. This gave a turnover of 1.5, a reasonably heavy usage, though not so large as had been anticipated for a weekend following the closing of schools and just ahead of the vacation period (Figure 6).

Delays

In expectation of a very heavy and probably concentrated usage on Saturday, elaborate preparations had been made to record in detail the nature and extent of any stoppages or delays, whether due to patrons having to wait in line in the street to get in (the maximum arrival rate was 44 in 15 minutes and 169 in an hour), waiting on the ramps while others parked, waiting in line at the cashier's window on departure, meeting delay on the ramps when leaving (the maximum departure rate was 50 in 15 minutes), or encountering congestion at the exits caused by either the package delivery service or by traffic conditions in the streets outside. To sum up very briefly the study of delays, *there were no delays of any kind at any time,* no car had to wait anywhere for more than a few seconds, and there were no complaints by patrons. That there were no delays is of course most significant.

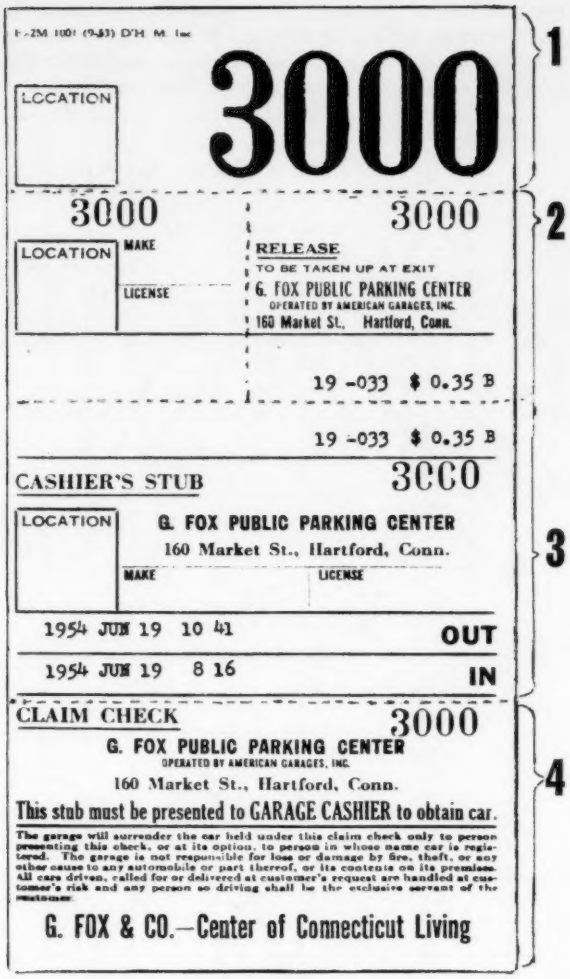
Individual Parking Times

On Saturday, with a peak accumulation of 355 and no parking on the 4th or 5th levels, a large number of parkers were timed from the moment they drove in the entrance until they left the garage on foot. All those using the first floor and some using the second floor walked down the ramp, the others using the elevators. The average times were as follows:

Parkers on 1st level, walking out	2 minutes, 8 seconds
Parkers on 2nd level, walking out	3 minutes, 33 seconds
Parkers on 2nd level, using elevators	4 minutes, 40 seconds
Parkers on 3rd level, using elevators	4 minutes, 35 seconds
Average parker	3 minutes, 36 seconds

In explanation of the slightly faster time for the 3rd level parkers, this was probably due to their having more clear space and less interference while parking. About one-third of all parkers were delayed from 20 to 30 seconds by observer-interviews.

An estimate based upon this garage reaching its full capacity, indicates an average storage time of about 4 minutes, 30 seconds. A generally accepted rule of thumb in large attendant-operated garages is to expect attendants to average 12 cars per hour or one in five minutes, and an earlier study of one such garage showed an average of 5.4 minutes (where about 50 percent of the trips were "dual," involving storing


LOCATION
3000
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LICENSE
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G. FOX PUBLIC PARKING CENTER
OPERATED BY AMERICAN GARAGES, INC.
160 Market St., Hartford, Conn.
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CASHIER'S STUB
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CLAIM CHECK
3000
G. FOX PUBLIC PARKING CENTER
OPERATED BY AMERICAN GARAGES, INC.
160 Market St., Hartford, Conn.
4
This stub must be presented to GARAGE CASHIER to obtain car.
The garage will surrender the car held under this claim check only to person presenting this check, or at its option, to person in whose name car is registered. The garage is not responsible for loss or damage by fire, theft, or any other cause to any automobile or part thereof, or its contents on its premises. All cars driven, called for or delivered at customer's request are handled at customer's risk and any person so driving shall be the exclusive servant of the customer.
G. FOX & CO.—Center of Connecticut Living

Fig. 3

Ticket system, using a four-section ticket. Section 1 is placed on the car and removed as the car leaves the garage exit. Sections 2 and 3 go to the cashier when the car is parked. Section 2 is given to the car owner when fee is paid, and must be shown to the attendant at the exit, for matching with Section 1. Half of Section 2 may be retained by the driver as a receipt. Section 3 is retained by the cashier as a permanent record. Section 4 is given to the owner as a claim check.

one car and delivering another). It is of course to be expected that attendants, particularly when aided by man-lifts or sliding poles, will handle cars more rapidly than the average car-owner, and attendants are essential where cars must be stored in aisles or two or more deep, but it is significant to note that self-parking takes so little of the car-owner's time. At the other end of the cycle, on car deliveries, at the attendant-parking garage studied, the average delivery time, from presentation of ticket to departure from building, was 3.9 minutes. No data were taken on this phase at the G. Fox garage, but it is reasonable to assume that, just as with attendant operation, the average departure would require somewhat less time than a storage, and also would involve no waiting for an attendant.

Comparison of Self-Parking and Attendant-Parking

In 1952 an operational study was made of a large and modern department store attendant-parking garage in another city, affording an excellent basis for a comparison which is presented in the table below:

	Attendant-parking garage	Self-parking garage (G. Fox)
Capacity, spaces	516	650
Number of levels	5	6
Reservoir capacity, spaces	24	26
Number of entrances used	2	3
Number of cars parked, 8 A.M. - 6 P.M.	802	991
Number of attendants serving cars	12	7
Peak accumulation, cars	371	355
Percent peak accumulation was of capacity	72%	55%
Peak 15-minute inbound volume	46	44
Peak 30-minute inbound volume	86	87
Peak 1-hour inbound volume	160	169
Peak 2-hour inbound volume	294	323
Peak 15-minute outbound volume	41	50
Peak 30-minute outbound volume	77	93
Peak 1-hour outbound volume	143	170
Peak 15-minute In and Out volume	67	78
Peak 30-minute In and Out volume	116	146
Peak 1-hour In and Out volume	221	280
Average entrance delay, 2-hour peak period	6.8 min.	0
Maximum entrance delay, 2-hour peak period	21.5 min.	0
Maximum number cars in line in street	20	0
Average length of time parked	2 hrs. 48 min.	2 hrs. 13 min.

Fig. 4

Package Service ticket. Gummed tabs are stuck on all packages, which are assembled in bins at the garage.

Fig. 5
Map of a portion of the Hartford central business district, showing the location of the G. Fox Garage and the downtown destinations of parkers using this facility.

The two garages are quite similar in size, capacity, number of levels, the arrival pattern (Figure 7), the day's load, and in peak accumulation. The reservoir areas are about equal in capacity, but there is the important difference that in the attendant-operated garage, having a reservoir of six four-car lanes, all the cars in any one lane must be removed before another car can enter, while in a self-parking garage cars move forward as fast as the front car.

During the peak period the inbound flow or demand averaged higher at the self-parking garage (323 in 2 hours as against 294), yet there were no delays, as compared with an average delay of 6.8 minutes and a maximum of 21.5 minutes at the attendant-parking garage, coupled with a street waiting line of from 6 to 20 cars. The self-parking facility used only seven attendants as compared with 12 at the attendant parking garage, and none served as jockeys.

In self-parking the driver pauses only long enough to accept a ticket, then drives on. With attendants, it requires at least 10 seconds after the owner gets out, for an attendant to get in and away. If no attendant is ready, every car in the same lane is delayed accordingly. The purpose of a reservoir of course, is to absorb peak flows until the attendants can catch up. But when, as in most shoppers' garages, the peak flow is maintained for an hour or more, the only practicable solution is to provide extra attendants, a procedure usually avoided or held down because of the expense.

The record day at the G. Fox garage was on Monday, December 21, 1953, during the Chistmas rush, with 2013 parkers and a turnover of 3.1. Analysis of the ticket stubs for that day shows a peak accumulation of 610 and a peak inbound flow of 318 per hour (one every 11.3 seconds), a peak outbound flow of 455 per hour, and a peak in-and-out flow of 496 per hour. No study was made at that time, but it is reported that there was a short street line for about one-half hour at the peak. There were slight delays in departures about 9 P.M., due to traffic congestion in the street outside. One can only speculate as to the results if an attempt should be made to handle such a volume with attendants.

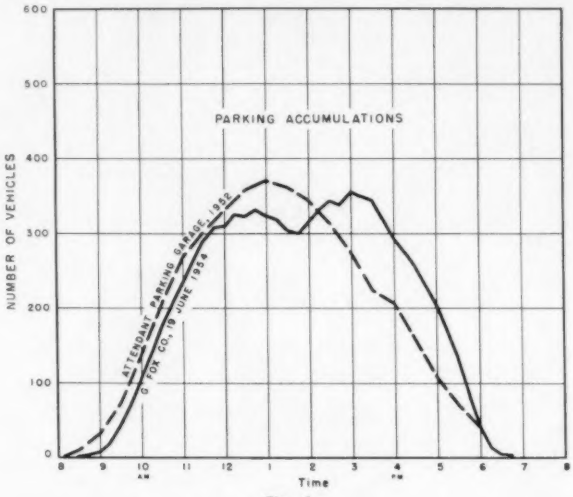

Fig. 6
Accumulation of parkers.

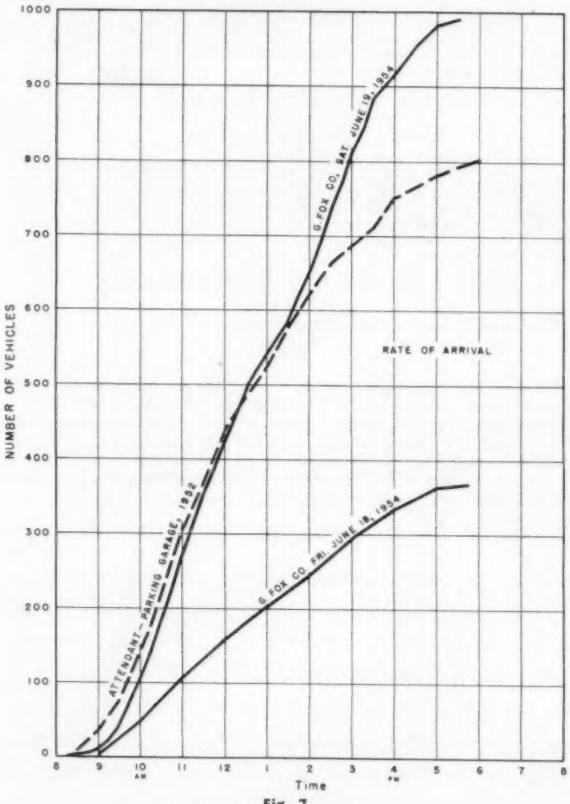

Fig. 7
Rate of arrival of parkers.

Parking Habits at the G. Fox Garage

On both Friday and Saturday as many of the parkers as possible were interviewed, resulting in a 61 percent sample on Friday, a 35 percent sample on Saturday, or a 42 percent total sample. The following tables summarize some of the information obtained from those drivers interviewed in this sample:

Table I

Sex of Driver	Friday, June 18 No.	Percent	Saturday, June 19 No.	Percent	Total No.	Percent
Female	111	49.3	159	46.3	270	47.6
Male	114	50.7	184	53.7	298	52.4

(A four-week record, made in March and April 1954 showed a majority of female drivers on every day but one, the average being 62 percent female.)

Table II

No. persons per car, incl. driver	Friday, June 18 No. cars	Percent	Saturday, June 19 No. cars	Percent	Total No. cars	Percent
1	96	42.7	95	27.7	191	33.6
2	84	37.3	163	47.5	247	43.5
3	34	15.1	53	15.4	87	15.3
4	9	4.0	26	7.6	35	6.2
5	2	0.9	5	1.5	7	1.2
6			1	0.3	1	0.2
	225	100.0	343	100.0	568	100.0
Total persons	412		715		1127	
Average persons per car	1.8		2.1		2.0	

Table III

Trip Purpose	Friday, June 18 No.	Percent	Saturday, June 19 No.	Percent	Total No.	Percent
Shopping	186	82.7	319	92.9	505	88.8
Business	27	12.0	9	2.6	36	6.4
Work	1	0.4	1	0.3	2	0.4
Med-Dental	4	1.8	5	1.5	9	1.6
Soc-Recreation	4	1.8	4	1.2	8	1.4
Other	3	1.3	5	1.5	8	1.4
Total	225	100.0	343	100.0	568	100.0

Table IV

Home Address	Friday, June 18 No.	Percent	Saturday, June 19 No.	Percent	Total No.	Percent
Hartford city	(19)	(8.5)	(44)	(12.8)	(63)	(11.1)
Metropolitan area	127	56.5	174	50.7	301	53.0
Balance of Connecticut	78	34.6	136	39.7	214	37.7
Out of State	16	7.1	33	9.6	49	8.6
Unknown	4	1.8	—	—	4	0.7
Total	225	100.0	343	100.0	568	100.0

(It is noteworthy that nearly one-half of the G. Fox shopper-parkers came from outside the metropolitan area. Figure 8 indicates the store's wide trading area.)

Table V

Downtown Destinations (vehicles)	Friday, June 18 No.	Percent	Saturday, June 19 No.	Percent	Total No.	Percent
G. Fox and Brown-Thompson	190	84.5	291	84.9	481	84.7
Sage Allen Co.	6	2.6	10	2.9	16	2.8
Miscellaneous	29	12.9	42	12.2	71	12.5
	225	100.0	343	100.0	568	100.0

(The Fox garage, although only one block from Main Street (see Figure 5), is at one edge of the business district, so that practically all destinations are to the west. It appears that the new municipal garage on Church Street is conveniently located for destinations west of Main Street, especially so since the Fox garage is down a sharp grade from Main Street.)

Table VI

Distance walked, feet June 18-19 combined	No.	Percent
400 or less	469	83.5
400 - 500	2	0.4
500 - 600	1	0.2
600 - 700	3	0.5
700 - 800	7	1.2
800 - 900	13	2.3
900 - 1000	46	8.2
Over 1000	21	3.7
	562	100.0
Unknown	6	
	568	

Average distance 476 feet.

(The higher than usual average distance is due to the fact that the principal destination (the G. Fox store) is 370 feet from the garage, and that the garage is at one edge of the business district.)

Duration of Parking and Fees Paid

Examination and analysis of the garage's ticket stubs for Friday, June 18, and Saturday, June 19, yielded the following information regarding duration of parking of all parkers and fees paid by all parkers on these two days:

Table VII

	Friday, June 18		Saturday, June 19		Total	
Total number of parkers	368		991		1359	
Total time used	747.5		2213.3		2960.8	
Average duration	2 hrs. 2 min.		2 hrs. 13 min.		2 hrs. 11 min.	
Duration	No.	Percent	No.	Percent	No.	Percent
0 - 30 min.	32	8.8	25	2.5	57	4.2
30 - 60 min.	55	14.9	125	12.6	180	13.3
1 - 2 hrs.	137	37.2	344	34.7	481	35.4
2 - 3 hrs.	64	17.4	254	25.6	318	23.4
3 - 4 hrs.	40	10.9	137	13.8	177	13.0
4 - 5 hrs.	23	6.2	59	6.0	82	6.0
Over 5 hrs.	17	4.6	47	4.8	64	4.7
	368	100.0	991	100.0	1359	100.0

(The slightly longer average duration on Saturday is perhaps due to this being more of a "family" day, as indicated by the higher car occupancy — 2.1 vs. 1.8.)

Table VIII

		Friday, June 18		Saturday, June 19	
Schedule	Fee	No.	Percent	No.	Percent
	0	4	1.1	4	0.4
2 hrs.	$0.35	241	65.5	580	58.5
3 hrs.	$0.50	61	16.6	216	21.8
4 hrs.	$0.65	30	8.1	109	11.0
5 hrs.	$0.80	20	5.4	48	4.9
6 hrs.	$0.95	5	1.4	19	1.9
Over 6 hrs.	$1.00	7	1.9	15	1.5
		368	100.0	991	100.0
Average fee		$0.44		$0.46	

Influence of Centralization

All parkers interviewed who gave shopping as their purpose were asked, "Why are you shopping downtown rather than elsewhere?"

The shopper-parkers interviewed were also asked, "Would you have come downtown rather than elsewhere if this garage were not available?" Replies to these questions are shown in the following two tables:

Table IX

REASON FOR SHOPPING DOWNTOWN

Reason	Friday, June 18 No.	Saturday, June 19 No.	Total No.	Total Percent
Selection	95	172	267	54.5
Like Fox's	15	27	42	8.6
Particular item	16	25	41	8.4
Closest	11	19	30	6.1
Charge account	11	19	30	6.1
Other business	11	14	25	5.1
Habit	4	8	12	2.5
Good parking	5	6	11	2.3
Prices	7	3	10	2.0
Service	2	8	10	2.0
Quality of goods	1	3	4	0.8
For a change		4	4	0.8
Sale	3		3	0.6
Fashion show	1		1	0.2
	182	308	490	100.0
Unknown	4	11	15	
	186	319	505	

Table X

INFLUENCE OF GARAGE

	Friday, June 18 No.	Saturday, June 19 No.	Total No.	Total Percent
Would have come downtown if garage were not available	145	235	380	75.7
Would have come but not by car	7	11	18	3.6
Would not have come	34	70	104	20.7
	186	316	502	100.0
Unknown		3	3	
Total	186	319	505	

It is most significant that 21 percent of the shopper-parkers interviewed would have gone elsewhere than downtown had it not been for the availability and convenience of the Fox garage. It is also to be noted that expansion of the sample indicates that on Saturday the availability of this garage brought at least 200 cars downtown which would not have otherwise been there.

It will be noted that in response to the question "Why are you shopping downtown rather than elsewhere?", only 11 persons or 2.3 percent gave "Good Parking" as the reason, while in response to a later question 104 persons or 21 percent of the same people said that they "would not have come downtown if this garage was not available." There is no inconsistency in this. The first question is very general in nature and tends to bring out only the primary objective of the particular trip, while the second question induces the shopper to focus attention upon a specific decision. It is entirely reasonable, for example, that a shopper should make the trip because she likes the Fox store, and still say that she would not come if the convenient garage was not available.

Door Count

On Saturday, June 19, the G. Fox Company made a door count of all pedestrians entering the store from 9.30 A.M. to 6:00 P.M., in half-hour intervals. The following figures are the results of this door count:

9:30 - 10:00	1424
10:00 - 10:30	1563
10:30 - 11:00	2023
11:00 - 11:30	1843
11:30 - 12:00	2036
12:00 - 12:30	1808
12:30 - 1:00	1896
1:00 - 1:30	2033
1:30 - 2:00	2089
2:00 - 2:30	2099
2:30 - 3:00	2065
3:00 - 3:30	1861
3:30 - 4:00	1650
4:00 - 4:30	1626
4:30 - 5:00	1338
5:00 - 5:30	763
5:30 - 6:00	310
Total	28,427

Of the 28,427 persons entering the store 4,478 used the entrance near the Fox garage. No data are available on the total number of persons entering the store who came by automobile, but (by expansion of the sample) those parking at the Fox garage (including passengers) and destined for the Fox store (or Brown-Thompson) were 1,748 or only about 6 percent of the total entering the store. It is not known how many Fox customers parked elsewhere.

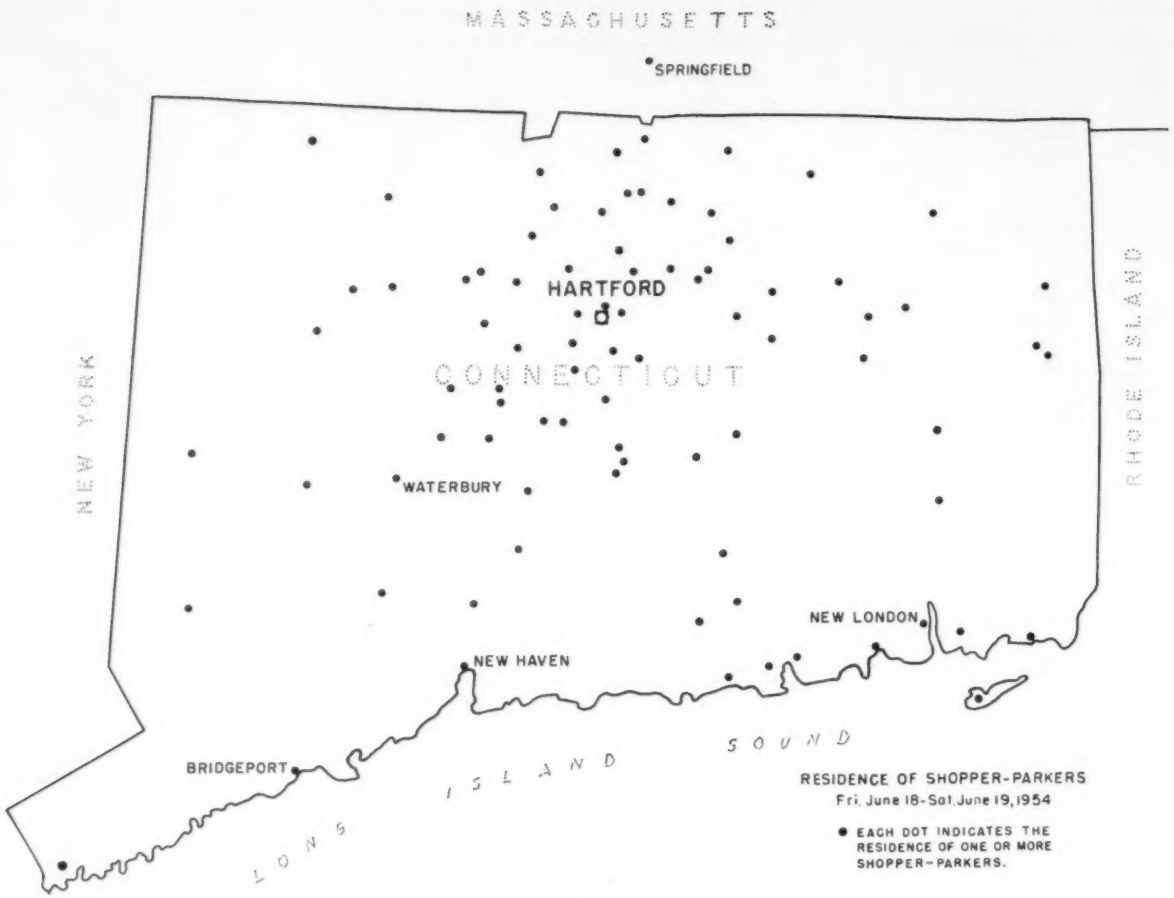

Fig. 8
Wide trading area of the G. Fox Co. store. Approximately 47% of the parkers come from outside the Hartford metropolitan area.

General Comment

At the G. Fox garage it is the usual practice by the attendants directing parkers, to suggest that cars be backed into the stalls, although no pressure is used and the driver is free to select a stall and to head in if he prefers. Usually the spaces are filled progressively from the ground level up, and on heavy volume days at least one attendant is provided per level as a guide. At the time of peak accumulation on June 19 a quick count showed that about 80 percent of the cars had been backed into place. There was little or no protest by the drivers, many of whom were not experienced in backing maneuvers, and it is believed that the practice is desirable except during peak periods, when it probably is preferable to disperse the parking somewhat and keep the aisle clear by encouraging heading into the spaces. In any case some direction by attendants is desirable, to insure parking three cars per bay.

A study of driver attitudes toward self-parking has been published[1] based upon interviews with parkers who had used both self-parking and attendant-parking garages, in Grand Rapids, Michigan, in 1952, and in that study a majority even among women drivers, expressed a preference for self-parking. Since that time the large Hecht Company customer parking garage in Arlington, Virginia, has clearly demonstrated driver acceptance of this type of facility. At the G. Fox garage approval of self-parking was manifest, and during the two days of the study only one driver refused to accept it.

The advantages of self-parking appear to be definite. Granted that the unit space must be larger and double parking and aisle parking eliminated, with a consequent reduction in total possible capacity and hence in possible income, it must be borne in mind that this reduction applies only when the facility is used to capacity. It is possible that the very considerable saving in labor costs will more than offset the difference. Also it is quite possible that the single row and clear aisle parking, permitting much faster handling, will lead to a higher turnover. Consideration also must be given to the fact that the owner may lock his car, that it will not be driven by anyone but the owner, and that, with delays eliminated, the net time demand on the owner will often be less than under attendant operation. It always is true, of course, that the method of operation as well as the type and design of a parking facility is influenced or even determined by the location, the area and dimensions of the site, and the service objective. Certainly a self-parking design requires wide aisles, gentle grades, wide stalls and single-row parking, not possible at every location.

[1] *Traffic Engineering*, May 1954.

The Traffic Engineer and Transit

By Harold G. Morris

General Manager, United Transit Company, Providence, R. I.

Chairman, Civic Planning & Traffic Board, Providence, R. I.

The New England Section, ITE, held its first 1955 meeting in Providence, Rhode Island, last January. Following dinner, Mr. Morris presented this paper.—EDITOR.

REPRESENTING THE TRANSIT INDUSTRY as I do, I should like to divide my discussion of the relation of the traffic engineer and transit into three parts based on the well-known E's—engineering, education and enforcement.

THE TRAFFIC ENGINEER

(Magician or Acrobat?)

A comparative newcomer to the field of engineering, as we measure time, the Traffic Engineer, might be described as a quickly grown-up youngster. Force of circumstance has pushed him into an adult somewhat before his time. Unlike other branches of his profession, there are no guide posts of precedent on which he can lean with a feeling of security; there are no tools which have been handed down to him with the admonition that "These will work, my son,"—no prepublic acceptance, by precedent, of his acts and deeds.

So, over a comparatively short space of time, he has had to forge his own tools, temper them in the whirlpool of public opinion, expand them, apply them as best he can, while at the same time he himself learns how to use them —all the while an harrassed public looks down on him and says, "Why don't you fellows do something about this traffic?" But at the same time few are willing to submit themselves to his remedies—concocted, some believe, from the herbs and plants of witchcraft and sorcery.

He has, however, one friend who keeps his house from tumbling down around him—that is the public transit vehicles. Representing as they do but approximately 6% of the vehicles on the downtown streets, they carry in people an amount aproximately equal to the number carried by their multiplying competitors. By illustration, a cordon count in Cleveland recently showed that 370,000 people entered the downtown area between 7:00 A.M. and 7:00 P.M.—199,500 came in 5,000 transit vehicles, and 170,500 arrived in 121,-300 automobiles and trucks. Transit represented 4% of the vehicles, but brought 54% of the people. None of this 54% required any vehicle parking space whatsoever.

Again, in Cleveland, a check showed shoppers in two large department stores came by public transit to the number of 75%. A large percentage of people employed in the downtown area came by public transit.

In Providence, the UTC carries out of the downtown area over 12,000 people in the maximum P.M. rush hour. This is done in 275 vehicles. To do this same job by private automobile at 1.5 passengers per car would place 8300 additional automobiles on the downtown streets of Providence in one hour; would require, also, 8300 additional parking spaces. In other words, based on these figures above, just for the rush hour, it is evident that one bus does the work of 30 automobiles with zero demand for parking space, either off-street or on-street.

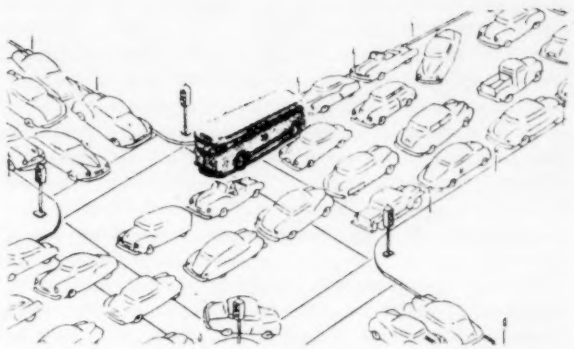

Fig. 1

". . . just for the rush hour, it is evident that one bus does the work of 30 automobiles with zero demand for parking space . . ."

For the city to build off-street garage space for these vehicles would take 20 garages of the type now contemplated on Pine Street, with an expenditure of over $20,-000,000.

For the downtown area to provide open-lot storage for these 8300 cars would mean, at 350 sq. ft. per car including lanes, a total non-productive land area of 2,900,000 square feet. The whole downtown business area encompasses only 3,350,000 square feet—so 86% of the present active business area would have to be torn down to provide this additional space.

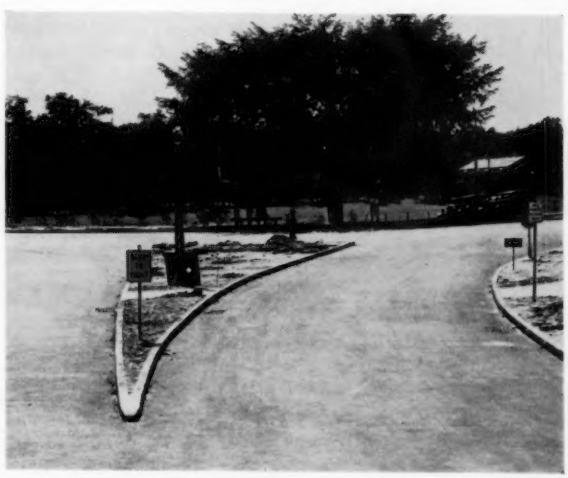

Fig. 2

"". . . the Traffic Engineer . . . takes sand and mortar and makes elevations in the streets — which he calls channelization . . ."

It is a serious matter, and those who plan freeways should take facts of this kind into consideration and plan for more than just roadways, however wide, however elevated, or however fast. Automobiles, like the waters of a hurricane, like the logs that come down the waterways from the forests, must have an adequate reservoir to contain them at the end of their journey or there is disaster.

So today, the Traffic Engineer finds himself in the role of the magician in his endless task of keeping automobiles on the move. He takes sand and mortar and makes elevations in the streets—which he calls channelization; he uses varied colored glass and bulbs—which he calls signals, and which command automobiles to stop or go and pedestrians to stand or walk. He places magic metal posts on the sidewalk with a bulge at the top. Into these, he invites people to drop coins, in exchange for which he rents them a piece of valuable land for an extremely limited period of time. And through these devices and other sleight-of-hand performances like "No Stop — No Stand, or else" and like making cars disappear (by tow), he becomes known as the "Magician of the Street."

Because he is greatly misunderstood, he sometimes walks a lonely and perilous course, much like the acrobat, high above the streets. From this insecure vantage point, he looks at the struggling masses below him; he sees them crossing at all angles, confused and confusing; and so he says, "Let's get a little order here." Down he comes, statistics in hand, and around him is wrapped his first love—a one-way street plan. He lines the streets with graceful ribbons of paint, tight-ropes his way along and fashions for himself a profusion of white on black—which he calls a traffic pattern.

And so he labors, day-in and day-out, in the cause of our citizens, most of whom desire at all times to move faster and faster and to park more and more for longer and longer; and many of whom say, "This plan is good" but add, "For the other fellow."

Yet, as he labors towards an all "automobile" city, he must be disturbed about the inadequacy of his reservoirs of downtown streets and available parking spaces and, not least of all, the inadequacies of his finances.

EDUCATION

(Where is a Moses?)

Now, as to the next "E" — Education. Transit has been accused of failing to provide necessary leadership in this matter of balancing out the transportation needs of a community, of standing idly by and watching itself being overcome by the tides of traffic without protest and without attempting to have the community understand the importance of the work it does. Thoughtful people point out that communities still portray the role of transit as monopolistic when, as a matter of fact, it is highly competitive; taxes peculiar to it, and imposts and concessions of all kinds are still demanded from transit based on this monopolistic thinking; all to the detriment of the true purpose of its existence, which is service to people. In other words, transit has been charged with failure to enlighten the public, and public officials, in connection with its problems and changed status.

The charge of failing to meet the challenge of the automobile with adequate traffic measures can also be made with respect to the Traffic Engineer. One of the desperate needs of any community today is relief from its traffic problems; but public acceptance of the drastic measures necessary is not forthcoming because public enlightenment by the Traffic Engineer has not been an integral part of his task. He may well ask himself "How much have I done on this vital subject?" It is not enough to create a plan, and then go through the formality of announcing it to the public and giving the effective date.

Fig. 3

"One of the desperate needs of any community today is relief from its traffic problems . . ."

Education of the public to the needs of the community with respect to the regulation of traffic should be a continuing job — day in and day out. Every Traffic Engineering department of any size city should have its public relations officer — a Moses who leads us all to a better understanding — if we are to make the kind of progress that is needed. If transit lanes are required to move transit riders, there need be no apologies made, or reticence in granting them. Let the facts be publicized and they will be understood. For a long, long time, and in many places, I have said that the citizen who is making the greatest contribution to the solution of the traffic problem is the bus rider — you know that as well as I. Yet, he certainly receives no preferred treatment, or even equal treatment. Beyond that, as I have said before, he is actually penalized because he has to pay a privilege tax for his ride; has to subsidize in his fare the cost of a school ride for children, a responsibility that surely is not his; and so on.

We are apparently kindred souls in this matter of traffic engineering and public education to free the streets for the movement of goods and people. This is our common business. If there is a dedicated man, toiling in the cause of Public Improvement, I say it is the Traffic Engineer. Someone once said a dedicated man is never a silent man.

For too long has the Traffic Engineer remained aloof in this problem of public acceptance of his objectives. For too long has he allowed others to speak ineffectively for him, when he should have spoken up effectively. Too little does he have to say about the dire need for severe traffic remedies. Too late does he say the little he has to say; and then he says it many times, defensively. Perhaps, as Priscilla (Mullens) said to John Alden, when he interceded for his friend, Miles Standish, "Speak for yourself, John," it is time for the Traffic Engineer to speak for himself. Traffic objectives can be attained only through Public Acceptance. The Moses of the traffic engineer is Public Relations, and through that, Public Understanding, and then, Public Acceptance.

Fig. 4
"Although it is very difficult for the Police Department to be everywhere at once . . . he who ventures on thin ice is likely to fall through."

ENFORCEMENT

(How Much?)

The last of the three "Es" I have entitled "How much?" Although it is very difficult for the Police Department to be everywhere at once, it is a recognized fact that even a little violation can cause a great deal of delay to moving traffic. One car parked in an "All Rolling" lane can require two lanes of moving traffic to merge into one, and thus defeat the whole purpose of the "All Rolling" regulation. So we come to a definition of whether the community shall look upon that parked car as "Friend or Enemy." One man has abridged the rights of many to move freely along the street at a critical time of day; what shall be done: Again, the traffic engineer must take a position. It serves no useful purpose to say enforcement is no concern of his, if by the lack of reasonable enforcement, his plans come to naught.

In the critical area in which traffic now moves, when the whole business future of the downtown area is at stake, it is the duty of all agencies having to do with the forming of the law and its enforcement to cooperate to the end that the results originally sought for by the regulation shall be measurably realized for the common good. Many cities have "signed" many of its downtown areas as "Tow Away" zones, and then have done exactly that. It may be true that the harrassed motorist may leave his car in a restricted zone, but it is also true that he who ventures on thin ice is likely to fall through. This country has always operated on the basis of the greatest good for the greatest number, particularly where there are divergent views to be reconciled. Again, a public relations officer on the staff of the Traffic Engineer would assist in coordinating the efforts of all the city's agencies in the matter of traffic enforcement. A proper program of Education, as mentioned above, would help materially in creating better public observance.

The railroads have long said that the best way to find out if a rule is a good one is to enforce it and judge by the results. My own opinion is that no law or regulation is good which leaves it to the individual to determine for himself whether it applies to him or not; no law or regulation is good when it leaves in the minds of our citizens the thought or belief that the fear of penalty may be removed. Within our city, there are those who feel quite strongly that the penalties should differ with respect to different violations.

So "how much" enforcement is again a matter of the public's willingness to observe the posted regulations; the diligence of the enforcing agencies, the degree of the penalties and their application to all, and most important of all, the fullness of the public's understanding as to the reasons.

Finally, each of us — the traffic engineer and the transit company — shares the common objective and responsibility of moving the cities' people, each of us contributes to the common prosperity of the community — and in the performance of our separate but common jobs, each is dependent upon the other.

The traffic engineer must look increasingly to transit to help him with his burden, for he above all others understands the efficiency of the transit vehicle in its appointed task. He knows that a single transit vehicle takes the place of 30 automobiles; he knows that it requires no parking space; he knows that a bus with a seated load of 44 passengers occupies only 7 square feet of roadway per passenger compared with 76 square feet per passenger in automobiles, or 10 times more space than the bus, to carry the seated capacity of a bus.

The limited reservoir of our streets, particularly in our downtown areas, calls for the utilization to its capacity of our most efficient user of the street — the transit vehicle. Lest he fall heir to a greater problem than he, or any municipality of this size, has ever envisioned — that of all people traveling by private automobile — it may well be that the future yardstick of judging the efficiency of the traffic engineer, and the soundness of a community's approach to its automobile traffic, will be the success or failure of that community's efforts in providing regulations adequate and sufficient to permit a fast movement of transit vehicles along city streets.

(Continued on page 234)

Fig. 5
"Transit must be given more . . . elbow room . . ."

Highway Modernization Trends in The States

By The Editorial Staff

NEW BOND ISSUES and increased highway-user taxes, to provide additional funds for expanded highway modernization programs, are being proposed in many current state legislative sessions in a trend which will be broadened sharply if Congress enacts proposed federal legislation calling for more state matching revenue as part of a new multi-billion-dollar road building plan.

States in which new or expanded borrowing authority is being sought for the financing of free highways include Alabama, Delaware, Georgia, Maine, Massachusetts, Michigan, New York, North Carolina, Oregon, Tennessee and Vermont.

Gasoline tax increases have been proposed in a number of states, including Alabama, Connecticut, Indiana, Iowa, Maine, Michigan, Mississippi, Montana, New York, North Dakota, Texas and West Virginia. Legislation calling for extension of temporary gasoline tax boosts has been enacted in California and is pending in Kansas, Oklahoma and North Dakota.

New or increased taxes against trucks have been proposed in several states, including Arkansas, Iowa, Maine, Mississippi, Montana, North Dakota, West Virginia and Wyoming. Repeal or modification of existing truck taxes of types based upon weights and mileages has been proposed in Colorado, Kansas, New York and Ohio.

Proposals for state constitutional amendments to restrict the use of automotive tax revenues to highway purposes have been made in several states, including Delaware, Maryland, Montana and Oklahoma.

Among current and prospective developments, as reported from state capitals throughout the country, are the following:

ALABAMA: Governor Folsom asked a special session of the Alabama legislature to increase the state gasoline tax rate by 2 cents a gallon to amortize proposed highway bonds up to $100,000,000.

ARKANSAS: A bill proposing imposition of a ton-mile tax on heavy trucks was introduced in the state legislature. Estimated $5,000,000 annual yield from the levy would be divided between cities, counties and the state highway fund.

Another Arkansas legislative proposal would levy an additional 2-cent tax on gasoline to be paid solely by distributors, who would not be permitted to pass it on to consumers. Under the bill, the only way a distributor could escape the levy would be to charge wholesalers in Arkansas "no higher price for motor fuel than he charges a wholesaler in any adjoining state."

During previous Arkansas legislative sessions, there have been repeated charges that Arkansas motorists were being charged more for gasoline than motorists in other states.

CALIFORNIA: A bill to continue California's gasoline tax at its present 6-cent rate was enacted by the legislature. Without such legislation, the tax would have reverted to 5½ cents a gallon on July 1, reducing state highway construction funds by $25,000,000 a year.

Fig. 1
Hollywood Parkway in California, built at a cost of $5,800,000 per mile, carries 125,000 vehicles per day.

COLORADO: Governor Johnson called for whatever legislative action might be necessary to facilitate issuance of $35,000,000 in anticipation warrant bonds for highway construction, as approved by the voters at the November election.

State officials had previously been advised by bonding attorneys that defects in legislation providing for issuance of the bonds would require legislative correction before the bonds could be marketed.

Several bills have been introduced in the Colorado legislature to replace or soften the state's new gross ton-mile tax against trucks.

Fig. 2
Typical truck lane facility at approach to Colorado mountain pass.

CONNECTICUT: Governor Ribicoff named a committee of Connecticut financial experts to "reappraise" present

plans for financing the cross-state toll expressway and other highway projects.

The governor said he was concerned about the plans for financing the $398,000,000 Greenwich-Killingly Expressway because he had been told the commitment placed on state gasoline tax receipts to back the expressway bonds might jeopardize the state's ability to borrow additional funds for future highway projects.

A special state tax study commission has recommended that the state gasoline tax rate be increased from 4 to 5 cents a gallon to finance additional highway construction.

DELAWARE: Issuance of state bonds up to $10,000,000 to hard surface all of the state's dirt roads has been proposed by Rep. Mildred Tunnel of Georgetown.

Another Delaware legislative proposal, backed by Governor Boggs and the State Highway Department, would clear the way for issuance of additional Delaware Memorial Bridge revenue bonds to finance the construction of approach highways and thus free tax funds for other highway projects.

Also pending in Delaware are proposals to dedicate highway-user tax revenues to highway purposes through both statutory action and a state constitutional amendment.

GEORGIA: Half way through the Georgia legislature at this writing was a bill to carry out Governor Griffin's recommendation for the creation of a Georgia Rural Roads Authority, empowered to issue revenue bonds up to $100,000,000.

The legislation would set up a five-member authority, one member to represent the State Highway Board. Under the plan, the authority would issue bonds to finance rural road projects and collect rentals from the State Highway Department. To pay the rentals, the state would use a portion of funds now going to counties for road maintenance.

Although the authority would be empowered to issue up to $100,000,000 worth of bonds, the legislation sets a limit of $30,000,000 without specific permission from the governor to spend more.

In his budget message to the legislature, Governor Griffin indicated he would try to pave 16,000 miles of rural roads during his administration.

INDIANA: Asserting that Indiana counties and cities are "desperate for road funds," Rep. Ora A. Kincaid proposed legislation to increase the state gasoline tax from 4 to 6 cents a gallon.

The present Indiana levy yields more than $53,000,000 a year which is shared by the State Highway Department, the counties and cities and towns.

Kincaid said revenue raised by the proposed 6-cent tax would be distributed under the same percentage formula of 53 per cent to the State Highway Department, 32 per cent to the counties and 15 per cent to the cities.

Governor Craig has said he would veto any bill to boost the gasoline tax on grounds that the Republican platform in the state promised "no new taxes."

Kincaid said another bill would be introduced to adjust the proposed 2-cent gas tax increase to the possibility of the state receiving increased federal road funds. He said he referred to the government's announcement that private funds invested in toll roads might become a credit under matching funds to raise the federal road grants to Indiana.

If such a credit is allowed for toll roads, Kincaid said, the gasoline tax would be reduced from 6 to 5 cents a gallon under the other bill. The fifth cent then would be split, with the counties receiving 66⅔ percent of its revenue and the cities and towns 33⅓ percent. The increased federal aid then would go only to state road construction, he explained.

IOWA: Bills introduced in the Iowa legislature, as part of a program backed by the Iowa Good Roads Association, would increase the state gasoline tax from 5 to 7 cents and make permanent a temporary 1-cent gasoline tax enacted two years ago.

Another Iowa legislative proposal, separately sponsored, would impose an axle-mile tax on heavy trucks similar to a levy now in effect in Ohio.

KANSAS: Proposed legislation would extend the extra fifth cent of the state gasoline tax for another two years as a means of secondary road improvement.

A companion bill would require cities and counties to share equally in the revenue from the fifth cent of gasoline tax, which yields about $6,000,000 annually. Cities now get the biggest share of the tax.

Possibility of replacing the Kansas ton-mile tax against trucks with some other form of levy was suggested by Governor Hall, who told the legislature to re-examine the "policy and workability of the ton-mile tax" and if it is not equitable, "have no hesitancy" to replace it.

LOUISIANA: Bills appropriating $50,000,000 of general fund revenues for highway construction were enacted by a special session of the Louisiana legislature.

Of the total made available, $30,000,000 will go into rural roads and the balance toward matching federal funds for major highways. The program was hailed as the first step toward a contemplated 15-year, $1,500,000,000 highway construction plan, expected to be considered by the legislature when it convenes in regular session in May.

Rejected by the legislature was a proposal to nullify a 1954 legislative act under which the State Highway Department proposed to issue $50,000,000 in bonds.

The special session was called by the governor after the voters at the November election refused to validate the proposed road bonds and after a District Court held the bond enabling act unconstitutional. The Highway Department, however, proceeded with an appeal in the bond act test case after promising to issue no bonds until after the May legislative session.

Meanwhile, a special legislative highway study committee is working on recommendations for a long-range highway financing program for submission to the legislature at its May budget session. Bond issuance and highway-user tax changes may be included in the committee's proposals.

MAINE: A $30,000,000 highway bond issue, repayment of which would start in 1969, was proposed by Governor Muskie.

As an alternative to the bond plan, Republican legislative leaders took under consideration proposals for an increase in the state gasoline tax from 6 to 7 cents and imposition of a new ton-mile tax against heavy trucks.

MARYLAND: Pending state legislative measures affecting highway financing include a proposed state constitutional amendment to dedicate all highway-user tax revenues to highway purposes.

MASSACHUSETTS: Governor Herter called for an additional $150,000,000 highway bond issue, which would bring to a total of $700,000,000 the amount of highway bonds authorized in Massachusetts in recent years.

No gasoline tax would be necessary to amortize the proposed new bond issue, according to Herter, who urged that

the additional borrowing be authorized this year so as to become available for expenditure in 1957. This, he pointed out, would permit an immediate start on planning and engineering studies.

MICHIGAN: Submission of a proposed $500,000,000 highway bond issue to the voters in April was recommended by Governor Williams, who expressed belief it would be unnecessary to increase highway-user taxes to amortize it.

Williams said the bond funds, which would be spent at a rate of about $100,000,000 a year, plus present tax revenues, would provide $250,000,000 a year for the next five years for highways. From this would have to come about $31,400,000 a year to retire the bond issue, leaving $218,600,000 a year for actual construction compared to the present $150,000,000.

The governor recommended enactment of legislation to keep the bond funds separate from current highway funds and that the bond money be spent only on roads eligible for federal aid.

He said such a program need not await studies of construction priorities "because we have in the highway department and in other preliminary studies adequate information on which to determine where such a fund could be expended."

Williams declared the bond plan should be an interim program, limited to those needs which are the most urgent and uncontroversial and which are of importance to the state as a whole.

Other proposals pending in the Michigan legislature include a bill by Rep. Emil Peltz to submit to the voters in April a proposed increase in the state gasoline tax from 4½ to 6½ cents a gallon.

Such a 2-cent tax boost would increase the gasoline tax revenues for highway purposes by about $45,000,000 a year. Peltz, who heads the House roads and bridges committee, expressed opposition to the proposed $500,000,000 road bond issue unless it is accompanied by additional taxes.

MISSISSIPPI: Governor White asked a Mississippi special legislative session to enact a law to force out-of-state truck operators to buy sufficient gasoline in the state to propel their vehicles through Mississippi, or otherwise pay the state gasoline tax on that amount of fuel.

MONTANA: Legislative proposals, backed by the governor's interim highway study committee, would increase the state gasoline tax from 6 to 7 cents, the diesel fuel tax rate from 6 to 9 cents, and the gross vehicle weight tax schedule on trucks by about 16 percent.

Another proposal stemming from the interim studies calls for a state constitutional amendment to prohibit the diversion of highway-user tax receipts to non-highway purposes.

Also introduced in the Montana legislature, under separate sponsorship, was a bill to impose a weight-distance tax against heavy trucks.

NEW JERSEY: Complete modernization of New Jersey's highway system was advocated by Governor Meyner in his annual message to the legislature.

Implying additional highway-user taxes would be needed to finance the unprecedented highway construction program he seeks, Meyner said he would go into financial aspects of the problem in a subsequent budget message.

Because of its past policy of diverting highway-user revenues for general budget-balancing purposes, New Jersey has been limited in recent years to spending about $15,000,000 of its own fnnds and $9,500,000 to $10,000,000 of federal aid for new highway construction.

Meyner said that, because of the limited amount of matching state funds currently available, some $28,000,000 of unmatched federal aid will have accumulated by July 1.

Although observing that the President's proposed expanded federal-state highway programs offers great hopes for New Jersey, the governor emphasized the state legislature must make provision for matching funds if the state is to reap the benefits.

NEW YORK: Submission of a $750,000,000 highway bond issue to New York State voters next November appeared virtually certain after the proposal was favored by Governor Harriman in his message to the legislature.

Leaders of the legislative majority had previously endorsed the plan, which was recommended by the State Temporary Highway Finance Planning Commission. The latter suggested that the bonds be paid off by increasing the state gasoline tax from 4 to 6 cents a gallon and boosting diesel fuel taxes from 3 to 6 cents a gallon.

Besides advocating the highway bond plan, Harriman also asked the legislature to "re-examine" the 1951 law levying a weight-distance tax on heavy trucks.

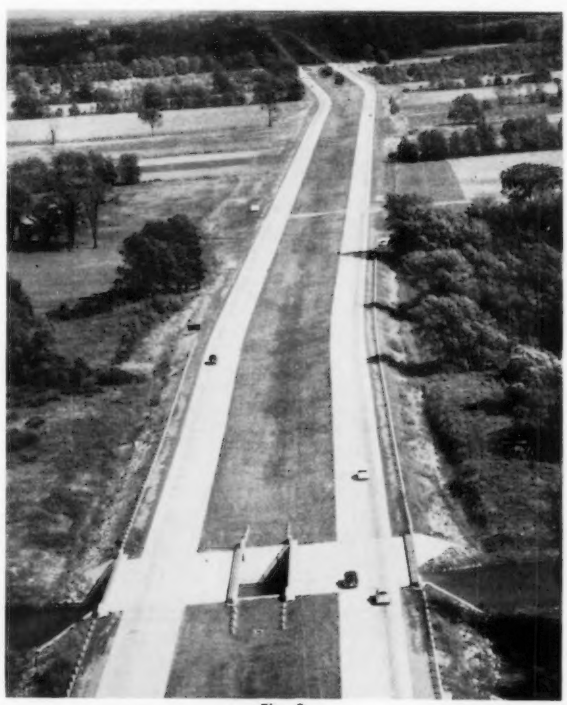

Fig. 3
Section of New York State Thruway, showing wide center mall and provision for third lane.

NORTH CAROLINA: Emphasizing that he wants a North Carolina pay-as-you-go road building program planned on a state-wide basis, Governor Hodges told the State Highway Commission to drop its proposal for a $150,000,000 bond issue.

"You will have on hand roughly $100,000,000 to $112,000,000 to build roads in the next two years," the governor told the commission. "I believe that if you will study your internal organization and point as much of this as possible

to primary roads you will, in my opinion, be able to get in as much work as you can do."

The commission had recommended that North Carolina spend $610,000,000 during the next six years for primary highway modernization and issue $150,000,000 in bonds and revise highway-user taxes to help pay the extra cost.

Although the govefnor transmitted the commission's recommendations to the state legislature, he made it plain he was not in favor of the bond issue proposal at this time.

Tax changes proposed by the commission to finance its bond plan included increased diesel fuel tax rates, new and higher levies against trucks, and revision of the gasoline tax refund system for non-highway fuel users.

NORTH DAKOTA: Three bills intended to raise $5,750,000 in additional revenues for highway financing in the coming biennium were passed by the North Dakota House and sent to the State Senate. They would:

Provide for an additional 1-cent refundable tax on motor fuel, to raise about $3,000,000 for state and secondary highways.

Transfer to the highway construction fund $1,500,000 from profits of the Bank of North Dakota and $500,000 from the North Dakota Mill and Elevator profits for matching federal highway funds.

Make permanent the 1 cent of motor fuel tax currently being paid for retirement of highway revenue anticipation certificates. After outstanding certificates are retired, the revenue would be transferred to the highway department consruction fund.

Other pending North Dakota highway financing bills, stemming from interim studies, would increase passenger car and truck registration fees and provide for further use of general funds for highways.

Also introduced in the legislature, under separate sponsorship, was a bill to impose a new ton-mile tax on heavy trucks.

OHIO: Conflicting reports came from Ohio concerning proposals to replace the state's controversial axle-mile tax on heavy trucks with a special 2-cent fuel tax increase for trucks only.

Meanwhile, Governor Lausche reiterated his contention that the axle-mile law "must be strengthened, not weakened."

OKLAHOMA: Governor Gary recommended that 1 cent of the state gasoline tax, now levied on a temporary basis, be made permanent. He further advocated a state constitutional amendment to earmark highway-user tax revenue for highways.

OREGON: Authorization for the issuance of $11,000,000 in highway bonds was recommended by Governor Patterson, who asked, however, that there be no gasoline tax increase, "in view of the uncertainty as to the amount of money which we may be required to produce for a match-money program."

A 2-cent gasoline tax boost had been recommended previously by the State Highway Commission to provide money for matching federal funds expected to become available.

Instead of going along with the tax proposal, Patterson recommended the legislature authorize issuance of $11,000,000 in bonds, with receipts earmarked for matching federal funds that might become available under a new federal road program.

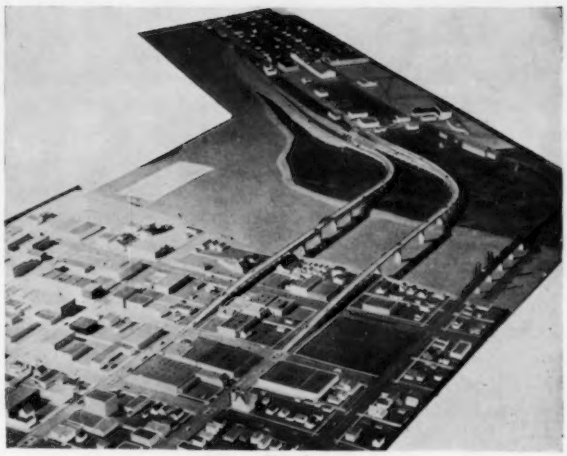

Fig. 4
Models are used in the design of highways in Oregon.

TENNESSEE: Expenditure of $18,000,000 in additional revenue for highways during the next biennium was advocated by Governor Clement.

Of the proposed additional revenue, which the governor suggested be raised through increasing motor vehicle registration fees, $1,000,000 a year would be used to match federal aid for state highways and $8,000,000 annually to continue the rural roads program which has been financed out of surpluses and bond issues.

Meanwhile, a campaign for a $100,000,000 Tennessee highway bond issue was launched by a group including the Tennessee Roadbuilders Association, the Tennessee Limestone Crushers Association, the Tennessee County Services Association, the County Judges Association and the County Highway Officials Association.

TEXAS: An increase from 4 to 6 cents in the Texas gasoline tax rate, as recommended by Governor Shivers, was in-

Fig. 5
Gulf Freeway, southeast from Houston, Texas, built by the State Highway Department on right-of-way purchased by the City.

troduced in the legislature by Rep. Charles Murphy of Houston.

He also introduced a proposed state constitutional amendment to dedicate all future motor fuel and lubricant tax receipts to highway purposes. One-fourth of such revenue now goes to public schools.

The proposed 2-cent gasoline tax hike would yield about $60,000,000 in additional revenue. Under the present state constitution, this would provide $45,000,000 for highways and nearly $15,000,000 for schools.

Spokesmen for Texas municipalities are insisting that a share of any new highway-user tax revenues be allocated to cities for street improvements and acquisition of rights of way. The state builds highways through Texas cities, but local communities must pay for the right of way.

Texas lawmakers have been informally considering a proposal to earmark one-fourth of the proposed increased gas tax revenues to cities instead of schools. This would require a state constitutional amendment.

During hearings conducted by the State Highway Commission prior to the legislative session, some support was voiced for a gasoline tax increase. Also heard was a proposal by spokesmen for railroads for a new $20,000,000 annual ton-mile tax against heavy trucks. Truck industry spokesmen countered with a proposal for a $20,000,000 state bond issue to finance the construction of four-lane highways between principal cities.

VERMONT: A $12,000,000 bond issue, to aid in financing a $22,000,000 highway construction program during the next three years, was advocated by Governor Johnson.

WEST VIRGINIA: New and increased highway-user taxes to raise an additional $21,600,000 for highway improvements were recommended by Governor Marland.

He called for: A 2-cent increase in the state gasoline tax, to yield $11,200,000; combination of a third structure and license tax against trucks, $4,600,000; changes in the motor vehicle and driver's license taxes, $5,000,000; and an increase in the diesel fuel tax, $800,000.

The governor also suggested that responsibility for part of the road building burden be shifted back to the counties.

In explaining his proposals to a press conference, the governor said the suggested third structure tax could take the form of either an axle-mile or ton-mile levy.

WYOMING: A group of truck operators expressed strong opposition to a proposed revision of Wyoming compensatory truck fees which would increase taxes against heavy trucks. The group further objected to the ton-mile method of computing taxes.

The controversial truck tax revision was recommended by the State Legislative Interim Committee as part of a program to finance an expanded highway program. Other recommendations include a proposal for further transfers of money from the permanent highway maintenance fund to the state highway fund to match federal aid.

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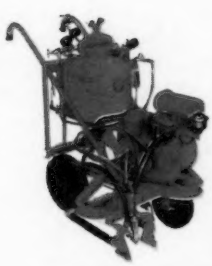

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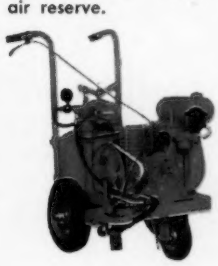

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THE TRAFFIC ENGINEER AND TRANSIT

(Continued from page 227)

The stake is not the financial success or failure of the bus company — few wept when the harness makers and the carriage makers, and the stage coach left the scene when something better came along; the stake here is the prosperity of our downtown area — and nobody yet has separated transit from that prosperity.

Here in Providence, we have been fortunate in having a progressive traffic engineering department. Our working relations with Roger Chandler have always been both pleasant and helpful. Like all good engineers, he has to be shown the need for any recommendations we make; but much has been done despite the absence of freeways and wide streets. In this statement, I would be delinquent if I failed to make the same statement with respect to the Traffic Division of the Police Department. Their's is the tremendous job of making the traffic plan work. I believe, however, the time is rapidly coming when the common tools we know so well today will no longer suffice, and I leave you with a widely quoted statement of a past President of the American Transit Association, who said these words not so long ago in an address before the Conference of Mayors.

". . . The spectacle now before us of great cities suffering themselves to be well-nigh paralyzed, not by the automobile, but by timidity to regulate and control the time, place and extent of use of an unmanageably large number of automobiles, is when all is said and done, a phenomenon which is anything but complimentary to our intelligence, to our capacity to order our own affairs, and to our ability to perceive what constitutes the greatest good of the greatest number and then take resolute steps to secure and safeguard it."

And again in his address, ". . . There is no fundamental reason why the right to use or store automobiles in congested areas in rush hours should not be progressively limited, as the necessities of particular local situations demand, just as similar limitations of the right to carry and use firearms, or to keep livestock in city areas, or to dump sewage into city gutters or ditches, have been evolved."

Let me close by saying the future of the Traffic Engineer, Transit, and downtown business is inseparably linked together.

Transit must be given more freedom to move, elbow room if you will; it must receive encouragement, financial and otherwise, to carry on, to experiment with different types of service; all of which may not be self-supporting, but may be good for downtown business.

It's time to rediscover transit.

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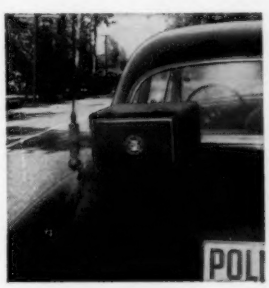

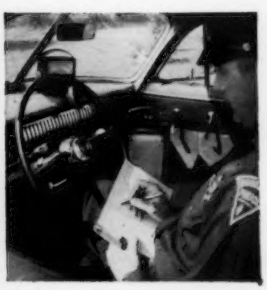

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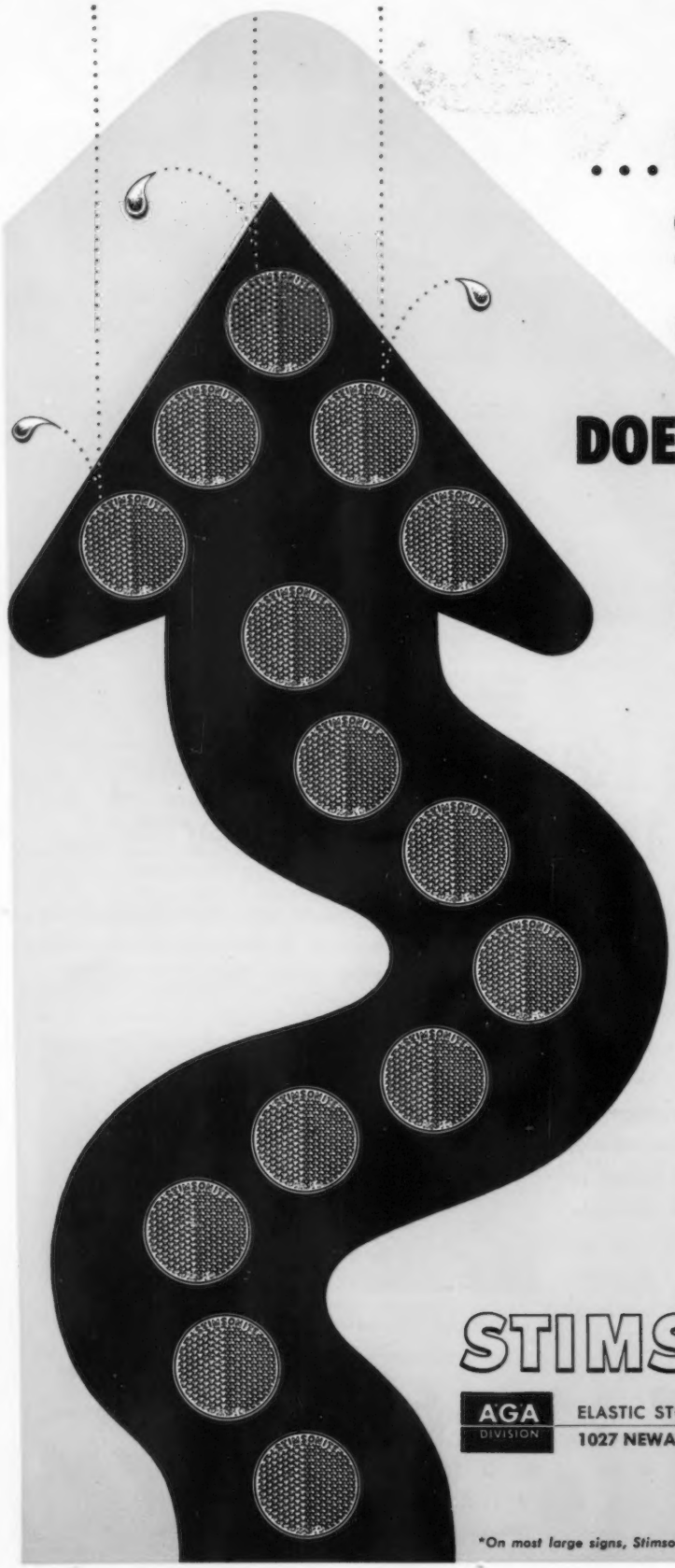

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TRAFFIC NEWS

Marsh Receives HRB Award

Burton W. Marsh

Burton W. Marsh (Charter Member, ITE), Director, Traffic Engineering and Safety Department, American Automobile Association, received the Roy W. Crum award at the opening session of the 34th Annual Meeting of the Highway Research Board, Washington, D. C., January 11, 1955. The awards, made annually, went also to Ralph W. Moyer, Associate Director, ITTE, University of California and posthumously to the late Walter H. Root of Iowa.

The award to Mr. Marsh was for distinguished service in recognition of outstanding achievement in the field of highway research.

Over 30 years ago, Burton W. Marsh, then just a few years out of college, accepted the post of Traffic Engineer for the city of Pittsburgh, Pa. Thus he became the first full-time municipal traffic engineer in the United States.

In the ensuing years he has devoted all his efforts to traffic problems, highway transportation, and research.

Mr. Marsh received his degree of Bachelor of Science in Civil Engineering from Worcester Polytechnic Institute in 1920. Following this he spent one year at the Yale University Graduate School.

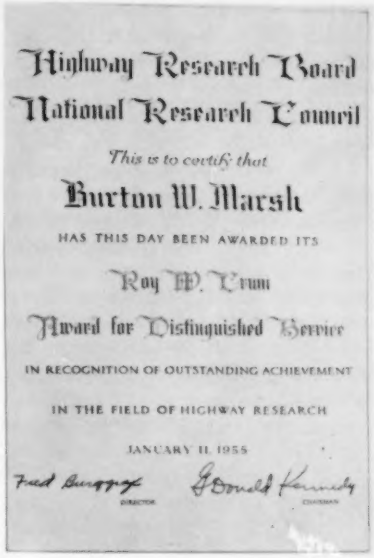
His early professional career was devoted primarily to city planning, zoning, traffic planning, major street planning and school studies with a consulting engineering firm in a number of cities, including Worcester, Mass., New Haven, Conn., Springfield, Mass., Norfolk, Va., and Dayton, Ohio.

After accepting the post in Pittsburgh, and later while in the same capacity in Philadelphia, he wrote extensively on traffic problems. One of his earliest published works was an article in the *American City Magazine* of April, 1926. It dealt with standardization of traffic signs, a subject which Mr. Marsh still actively pursues in his capacity as a member of the Joint Committee on Uniform Traffic Control Devices.

Other major publications of Mr. Marsh's during the period 1926-1932 include: *Report and Recommendations of the Central Business District Traffic Survey*, a report dealing with traffic control, parking and taxicab practices, published in Pittsburgh in 1927; *Planning Highway and Street Intersections for Modern Traffic Needs*, published in the Municipal Index of 1931; *The Use of Accident Records*, an illustrated pamphlet published in the Proceedings of the University of Michigan Conference on Highway Engineering, 1932; and *Traffic Control*, an illustrated paper published in the Annals of the American Academy of Political and Social Science, 1927. Numerous other articles by Mr. Marsh on various phases of city traffic engineering were carried in technical periodicals during this phase of his career.

In 1933, Mr. Marsh became director of the Traffic Engineering and Safety Department of the American Automobile Association, the post which he holds today. Under his guidance the department has developed from a two-man operation that published elementary school safety posters and lesson guides and worked for the expansion of the School Safety Patrols to a sizeable specialized staff devoted to Traffic Problems, Highways, Elementary School Safety, School Safety Patrols, Pedestrian Protection, High School Driver Education.

Although his duties as director of the national motoring organization's traffic and safety activities have grown, Mr. Marsh has continued his participation in many national traffic and safety activities outside the AAA. He has served continuously on the Executive Committee of the Highway Research Board since 1934, and he was Chairman in 1938 and 1939. He has long been active on the National Committee on Uniform Traffic Laws and Ordinances, and is currently Vice-Chairman of its Executive Committee. He has served on the National Committee for Traffic Training, and is on the Board of Consultants for the ENO Foundation for Highway Traffic Control. He is a Trustee of his Alma Mater, the Worcester Polytechnic Institute.



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IN THE FIELD OF HIGHWAY RESEARCH

JANUARY 11, 1955

Fred Burggraf — DIRECTOR

J. Donald Kennedy — CHAIRMAN

One of the pioneers in traffic engineering, Mr. Marsh has helped develop the principles, doctrines, techniques, procedures and reference literature for that engineering specialty. He has also actively promoted and encouraged research in many phases of highway transportation. In this field, he has long urged the importance of putting research findings into such form that they will quickly and extensively be put into full use. In the traffic safety field, Mr. Marsh was one of the first advocates of driver education and through the years he has been one of its most enthusiastic promoters. Likewise, he very early saw the need for greatly improved pedestrian protection programs, and he has been the leading advocate of them—the results of which have been notable to a greatly unappreciated degree.

Progress Being Made On Third Tube

Sand hogs working on the Third Tube of the Lincoln Tunnel at New York City were under compressed air for the first time as they approached the underwater section of the $100,000,000 tunnel construction at 8 o'clock Monday morning, January 17, 1955.

Working under compressed air, sand hogs entered the tunnel at the base of a 55-foot-deep land shaft in Weehawken, New Jersey, to go through a steel air lock, about 6½ feet in diameter and 34 feet long, which is supported in an 11-foot-thick block of concrete. This concrete bulkhead, 30½ feet in diameter, is installed inside the tunnel's cast-iron lining, about 30 feet in from the land shaft, to maintain air pressure in the tunnel.

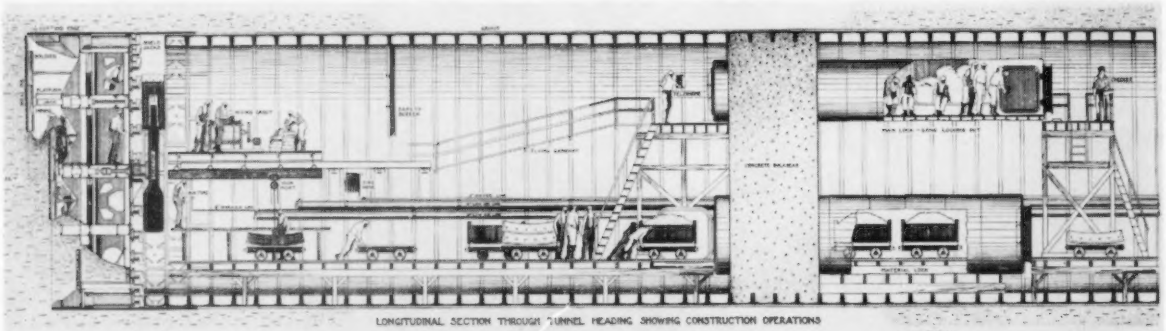
Compressed air is used to prevent river water from entering the tunnel and to help support the ground ahead of and around the mammoth steel shield that is "cooky-cutting" through silt in 32-inch shoves under the Hudson River. About 15 pounds of compressed air per square inch above the normal 15 pounds will be pumped into the tube. Under this pressure, sand hogs will work three hours, leave the tunnel for three hours and return for three hours to complete a six-hour working day. The job requires a 150-man force for four shifts of around-the-clock tunneling, six days a week.

Four large air compressors installed in the Weehawken contractor's yard near the land shaft will supply compressed air for the under-river construction. Two of the four compressors are stand-by compressors which can be put in operation in the event of mechanical failure of the other two. As an additional safeguard against power failure, electrical energy is furnished to the compressors by three separate power sources.

In addition to the air lock capable of handling 40 workers at a time, two similar locks have been installed in the concrete bulkhead for the passage of materials and for emergency use of sand hogs working under compressed air. The materials or muck lock is 39 feet long and 10⅓ feet in diameter, while the emergency lock is 20 feet long and 5 feet in diameter. The emergency lock, centered at the top of the concrete bulkhead, will also be used by Port Authority engineers to establish survey lines into the tunnel and keep the shield on course. Hydraulic lines as well as air and utility lines have been installed through the concrete bulkhead.

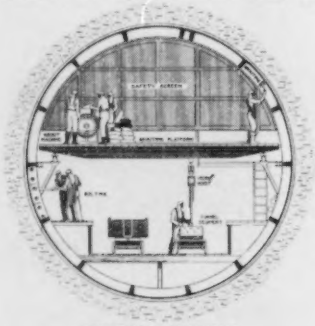
Another decompression chamber, similar in design but smaller, with two sections for testing and treating sand hogs for compressed air illness, is located in the Third Tube Medical Clinic in the Weehawken contractor's yard.

The first hundred feet (about 30 tunnel rings) of the dramatic 5,486-foot fourteen-month journey from Weehawken, New Jersey, to Manhattan, which began last November 9, was completed in "free air" (under normal pressure). The tunnel will comprise more than 2,000 individual cast-iron rings, 31 feet in diameter and 32 inches wide. To

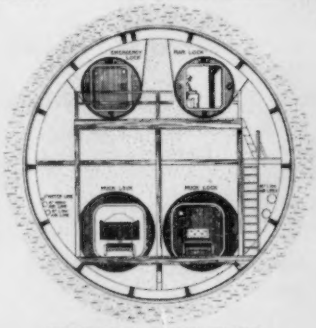


LONGITUDINAL SECTION THROUGH TUNNEL HEADING SHOWING CONSTRUCTION OPERATIONS

REAR OF SHIELD
ERECTION OF IRON & MUCKING IN PROGRESS



VIEW FROM REAR OF SHIELD
BOLTING & GROUTING IN PROGRESS



EXTERIOR VIEW OF CONCRETE BULKHEAD
SHOWING AIR LOCKS

LINCOLN TUNNEL THIRD TUBE - TUNNELING OPERATIONS

Artist's conception of cross sections of $100,000,000 Lincoln Tunnel third tube shows how tube is being driven under Hudson River by shield method. The 18-foot long tunnel shield started boring the 5,486-foot-under-river portion of the tube from base of 55-foot-deep shaft in Weehawken, New Jersey, last November. Shield weighs 240 tons.

At left, tunnel shield with attached steel cutting edge is pushed through silt in 32-inch shoves by 28 giant jacks in rear of shield. Erector arm pivots about center of 31-foot tunnel diameter to place fourteen, 7-foot cast iron outer segments. Segments are then bolted together through flanges on inner edges. The segments weighing 1½ tons each are locked by a small key segment.

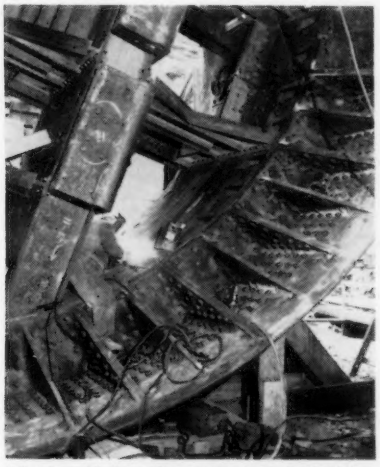
At center, sand hogs working under compressed air in chamber between shield and concrete bulkhead, take in river silt and deposit it on bottom of tunnel. Silt acts as ballast to offset buoyancy of incompleted tunnel. Sand hogs also bolt tunnel segments into place and move material by rail car into and out of working chamber.

At right, solid concrete bulkhead installed inside completed tunnel lining is used to retain compressed air in tunnel's forward working chamber. It is pierced by four air locks which enable men and materials to enter and leave tunnel working chamber without loss of air pressure.

form a ring, fourteen 7-foot-long segments and a key segment are placed by a mechanical erector arm attached to the rear of the shield. After a ring is installed, the shield is pushed ahead 32 inches by means of hydraulic jacks braced against the face of the previously assembled cast-iron ring.

The 240-ton shield, 18 feet long and 31½ feet in diameter, was assembled by the contractors for the under-river section of the Third Tube, the joint venture of Mason and Hanger Co., Inc., The Arthur A. Johnson Corp. and MacLean-Grove and Co., Inc.

Twenty-seven contracts totaling over $55,000,000 have been awarded to date for Third Tube construction work.



Joint is welded on nine-section tunnel shield during assembly at base of 55-foot-deep shaft of Lincoln Tunnel third tube in New Jersey. Cylindrical shield is 21½ feet in diameter, 18 feet long, and weighs 240 tons.

View shows front section of shield with cast steel edge which will be pushed through rock and silt like a huge cooky cutter. Twenty-eight giant hydraulic jacks, with a push of 200 tons each, will propel the shield forward in 32-inch thrusts on the 5,486-foot fourteen-month trip under the Hudson to New York. The initial push was made last November.

Clay Committee Recommendations

A greatly expanded toll road program looms from one of the principal recommendations made by the Clay Committee in its report to President Eisenhower, which was released publicly January 11th.

According to the report, there are 8,527 miles of toll roads in operation, under construction, financed, authorized, or proposed which coincide with the Interstate System, in 28 states. The report points out that this mileage is economically feasible. Apparently, at least, this mileage, which is a 900 per cent increase over the 988 miles of toll roads currently in operation, would be eligible for reimbursement. This would represent close to one-fourth of the total Interstate System.

The provision calls for the Federal government to reimburse states for existing and future toll road construction and then permit the continuance of toll collections on such facilities. The funds, so reimbursed, would be used to "further highway improvements."

This recommendation of the Clay Committee has already come under fire from three leading user organizations—the American Automobile Association, the National Association of Motor Bus Operators and the American Trucking Associations, Inc.—and indications are that many other organizations are preparing to take similar action.

It is reliably reported that the Committee drafted the toll road recommendation despite opposition to it by special advisors and by Federal road officials. Reports also have it that many Congressional leaders are frowning on such a provision.

The recommendation which apparently would open the gates of toll road construction is phrased as follows:

"Appropriate credit should be given to those states in which adequate sections of the Interstate System have been constructed by state or toll financing, provided the funds thus made available are used for further highway improvements. Moreover, states that elect to build further toll road sections of the Interstate System should be reimbursed for all costs other than financing, provided such funds are used for further highway improvement. Obviously, these funds would become available only after all other Federal funds had been matched as required by law."

The report (76 pages) lists 10 conclusions and recommendations, including provisions for the Federal government to spend $25 billion on the Interstate System during the next decade (with the states chipping in $2 billion); establishment of a Federal Highway Corporation to issue bonds to finance the Federal share of the work on the Interstate System, and continuance of Federal-aid to the states in the amounts authorized by Congress in 1954, with some adjustments.

A summary of the Committee's recommendations and conclusions—in addition to the one on toll roads—is as follows:

A safe and efficient highway network is essential to America's military and civil defense, and to the economy. The existing system is inadequate for both current and future needs. It must be improved to meet urgent requirements of a growing population and an expanding economy.

Total construction needs of all highway systems during the next 10 years are estimated at $101 billion, including completion to modern standards of the 37,600 miles of the presently designated National System of Interstate Highways. The present program if continued unchanged would make available for highways during that period approximately $47 billion, leaving a gap of $54 billion.

The Committee concurs with the Governors' Conference in recommending to the President that the Federal share of this needed construction program be increased to about 30 percent of the total, with states, cities, counties and other agencies remaining responsible for financing the remaining 70 percent.

The Interstate network is preponderantly national in scope and function. Modernization of the presently-designed system in 10 years, together with the most necessary urban connecting arterials, is estimated to cost $27 billion. It is recommended that State and local participation be $2 billion of this amount, which would continue the present responsibility of the states for this system.

Since roads are a capital asset, it is recommended that the Federal share of Interstate construction be financed by bonds to be issued by a Federal Highway Corporation created for this purpose by the Congress. The cost of the Interstate System improvement, together with the total authorized funds under the regular Federal-aid highway program to the States, would approximate the revenues which the Federal Government will derive from the motor vehicle fuel and lubricating oil taxes projected at the present rates.

The Federal Highway Corporation should have a Board of Directors to be composed of three citizens appointed by the President and confirmed by the Senate with the Secretaries of Treasury and Commerce as ex-officio members. On matters involving highway locations, the

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Part 1, Section 29 of revisions to The Manual on Uniform Traffic Control Devices, dated September, 1954:

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Secretary of Defense would also serve as an ex-officio member. The Commissioner of the Bureau of Public Roads would serve as Executive Director. The Board of the Corporation should be responsible for the development of financial policy. It should serve when necessary as an Appeals Board to resolve major points of difference between the Federal and State authorities which may arise under the program.

Toll roads built to acceptable standards and meeting other requirements of the Corporation may be included as segments of the Interstate system. However, toll financing is not a satisfactory solution to the full problem of network modernization.

It is recommnded that traditional Federal-aid to the States be continued in the amounts authorized by the Congress in 1954 with some adjustments in the amounts for urban areas, and Federal domain roads, omitting the Interstate System authorization since this system is provided for above.

In many States the modernization of highway enabling laws is necessary, especially in connection with the acquisition of land for right-of-way, the control of access, and the closer integration of state, city and county highway managements. States should be encouraged to revise existing statutes where needed to permit expeditious and economical completion of the program. Congress should provide for the use of the Federal right of eminent domain to acquire right-of-way for the Interstate System where it is not feasible to obtain it through normal procedures under State law and the State so requests.

Industry Trains Engineers

—American industry is rapidly becoming a post-graduate school for engineer training.

—The increasing complexity of industrial processes has put industry into the higher education business on a major scale as the gap widens between college trained engineers and production realities.

These are some of the conclusions reached in a survey report just compiled by the Professional Engineers Conference Board for Industry, a research group.

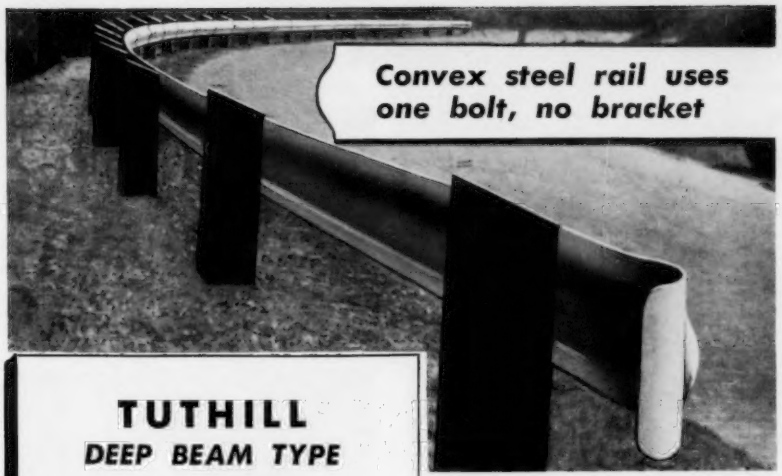
The nation-wide survey shows that engineer training ranges all the way from a program in a 10-man consulting office where two engineers a year are given training assignments to the program of a vast corporation operating a full-fledged college, empowered by the state to award degrees up to the doctorate.

Some few "holdouts" have resisted training programs, the report points out, but the trend is overwhelmingly in the direction indicated by the executive who summed up the situation as:

"The days when we could afford to toss a new man out in the shop and let him fend for himself are gone. We just can't afford it nowadays. It just isn't good economics today to fail to bring your new men to the highest possible point of efficiency in the shortest possible time."

The published report, "How to Train Engineers In Industry," is the result of an executive research survey undertaken by the Conference Board in cooperation with the National Society of Professional Engineers.

The Conference Board, headed by John D. Coleman, General Motors engineering executive in Dayton, Ohio, is made up of 28 leading industrial engineers.



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Yale Bureau Forming 1956 Class

The Yale Bureau of Highway Traffic recently announced that it would begin classes for the next academic year on September 19, 1955, and early indications point to the possibility of a class larger than the record number 34 men comprising the current 1955 class. Applications for admission will be received until May 1.

There are available a number of fellowships for the new academic year which will be awarded on a competitive basis to applicants who are residents of the continental United States and are graduates of an accredited engineering school. These fellowships offer up to $2,000.00 each.

In accepting students for enrollment in the one-year course of graduate study in traffic engineering, consideration is given to the character of work done in the undergraduate courses; to the evidence of attitude and interest of the student in highway traffic work, and to other relevant factors. Further information is available from Director, Bureau of Highway Traffic, Yale University, Strathcona Hall, New Haven 11, Connecticut.

New Appointments . . .

Hurd Appointed Director of Yale Bureau

Frederick W. Hurd (Mem., ITE), formerly Research Associate in Transportation at Yale University, was appointed Director of the Yale Bureau of Highway Traffic, effective February 15th, according to an announcement by Kent T. Healy, Chairman of the University's Committee on Transportation.

Frederick W. Hurd

Mr. Hurd, a leading highway and traffic engineer, succeeds the late Theodore M. Matson, who died December 15, 1954.

The Bureau of Highway Traffic was organized in 1926 at Harvard University, and moved to Yale 12 years later. It has pioneered the training of traffic engineers engaged in research aimed toward furtherance of safe and efficient traffic operations of streets and highways.

Mr. Hurd received the Bachelor of Science degree in Civil Engineering from the Missouri School of Mines and Metallurgy, and attended the Bureau of Highway Traffic at Yale as a student in 1939.

He was appointed to his first position in 1927 as highway designer with the Missouri State Highway Department. In 1939, Mr. Hurd became Missouri State Traffic Engineer, and in 1942 he was appointed Traffic Engineer of the Michi-

(Continued on page 243)

Kennedy Elected Cement Association President

G. Donald Kennedy (Mem., ITE) recently executive vice-president of the Portland Cement Association, has been elected president of that organization. He successds Carl D. Franks, who retires after 38 years of service with the Association.

G. Donald Kennedy

Mr. Kennedy, long prominent in the highway traffic and automotive safety field, joined the Portland Cement Association in January of 1950 as consulting engineer and assistant to the president. He was appointed executive vice-president in May 1953.

Mr. Kennedy has a record of more than 24 years' experience in the fields of structural, municipal and highway engineering. In 1933 he became deputy commissioner, and in 1940 state highway commissioner of Michigan. In 1942 he was elected president of the American Association of State Highway Officials and four years later received the George S. Bartlett award for "Outstanding Contribution to Highway Progress."

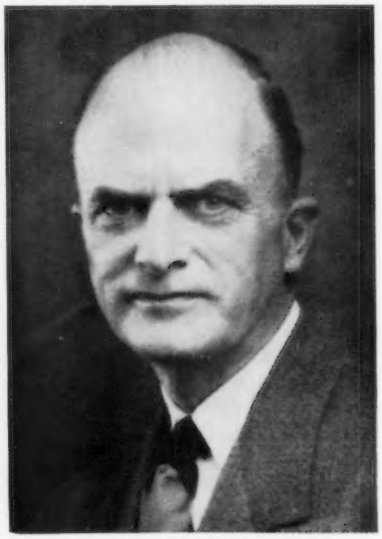
From 1943 to 1950 Mr. Kennedy served as Vice-President of the Automotive Safety Foundation, directing the development of long-range programs for highway improvement at both state and national levels.

A graduate in civil engineering from the University of Michigan, Mr. Ken-

(Continued on page 243)

Vey Named Manager N. S. C. Traffic and Transportation Dept.

Arnold H. Vey (Mem., ITE), director of the New Jersey bureau of traffic safety, has been named manager of the traffic and transportation department of the National Safety Council. He will have charge of the Council's activities in the entire field of traffic transportation safety.



Arnold H. Vey

"For a long time New Jersey has been outstanding among the states which have had the imagination and the courage to grapple realistically with the traffic safety problem," said Ned H. Dearborn, Council president. "Mr. Vey has played a prominent role in the progressive traffic safety measures undertaken in New Jersey, and we are confident that the entire nation will now benefit from his talents and experience."

Born in Kearny, New Jersey, in 1903, Mr. Vey attended Irvington High School and Rutgers University. From 1924 to 1927 he was assistant to the supervisor of transportation, City of Newark, and from 1927 to 1930, assistant engineer with the consulting engineering firm of Parsons, Klapp, Brinkerhoff and Douglas.

He was named state traffic engineer in 1930 and quickly earned a reputation as a pioneer in this expanding field. In 1952, he became the first director of

(Continued on page 243)

Collins Succeeds Hammond

The appointment of Gerald W. Collins as manager of the Transportation and Communication Department of the Chamber of Commerce of the United States was announced in late January by Executive Vice-President Arch N. Booth.

Mr. Collins, director of the Transportation Division of the Los Angeles, Calif., Chamber of Commerce since March, 1951, assumed his new position February 15. He succeeded Harold F. Hammond who recently was appointed executive vice-president of the Transportation Association of America *(Traffic Engineering,* January 1955).

A member of the National Chamber's Transportation and Communication Committee, Mr. Collins also has been active in a number of other organizations in the field of transportation.

Prior to joining the Los Angeles Chamber, Mr. Collins was a transportation rate expert for the California Public Utilities Commission. His period of transportation service in state government commenced in 1941 and was interrupted for two years of duty during World War II as an Army Air Force pilot.

Born in Canon City, Colo., Mr. Collins was graduated from high school, completed a course in transportation at Metropolitan Junior College and later studied law at Southwestern University, all in Los Angeles.

He is married, the father of twin boys and has made his home in Burbank, Calif.

G. DONALD KENNEDY

(Continued from page 242)

nedy is a registered civil engineer in the states of Washington, Michigan and California. His memberships in technical organizations include the American Society of Civil Engineers, the Institute of Traffic Engineers, the American Public Works Association, and the American Society of Planning Officials. He has held many national committee chairmanships including his present position as chairman of the Highway Research Board of the National Research Council.

As president of the Portland Cement Association, Mr. Kennedy will direct all activities of the organization, which include scientific research, the development of new or improved products and methods, technical service, and educational effort.

FREDERICK W. HURD

(Continued from page 242)

gan State Highway Department. He held this position until 1945, when he joined the Bureau of Highway Traffic at Yale.

In 1951-52, Mr. Hurd was the Executive Secretary of the Institute of Traffic Engineers. In addition to his other activities, he has served as consultant to the City of Stamford, Conn., and on a number of projects including traffic studies of the Hutchinson River Parkway and the New Jersey Turnpike.

He is a member of the Committee on Geometric Design, and of the Committee on Channelization of the National Research Council, Highway Research Board. He is also a member of the American Standards Association Committee on Safety Glass and a representative of the Institute of Traffic Engineers on the National Committee on Uniform Traffic Laws and Ordinances.

He is a Registered Professional Engineer, and a member of Tau Beta Pi and Phi Kappa Phi, honorary societies.

ARNOLD H. VEY

(Continued from page 242)

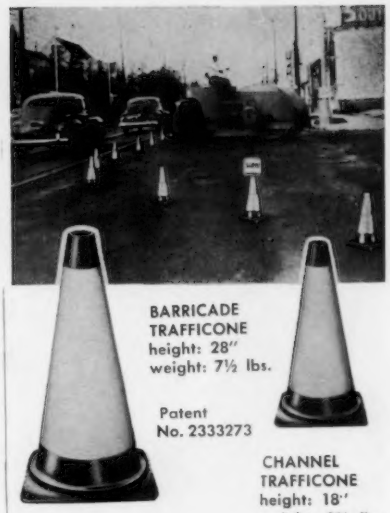
the newly-formed N. J. Bureau of Traffic Safety. He is a registered traffic engineer in the State of New Jersey.

During World War II he served four years on active duty with the Army transportation corps, holding various important commands responsible for moving supplies over the Burma Road in the China-Burma-India theater. He now holds the rank of full colonel.

Currently, Mr. Vey is chairman, transportation committee, New Jersey Civil Defense; secretary, State Coordinating Council on Traffic and Safety; member, National Committee on Laws and Ordinances, and chairman, National Conference on Uniform Traffic Accident Statistics.

He was chairman of the New Jersey War Transportation Committee in 1942, formerly executive secretary, New Jersey Highway Traffic Advisory Committee; former chairman and now a member, Department of Traffic, Highway Research Board, National Academy of Science; former member of the Joint Committee for the Preparation and Revision of the Manual on Uniform Traffic Control Devices, and other national groups on highway safety and engineering.

Although Mr. Vey will not assume his new duties until late in April, he will represent the National Safety Council at meetings of various national traffic agencies prior to that time.



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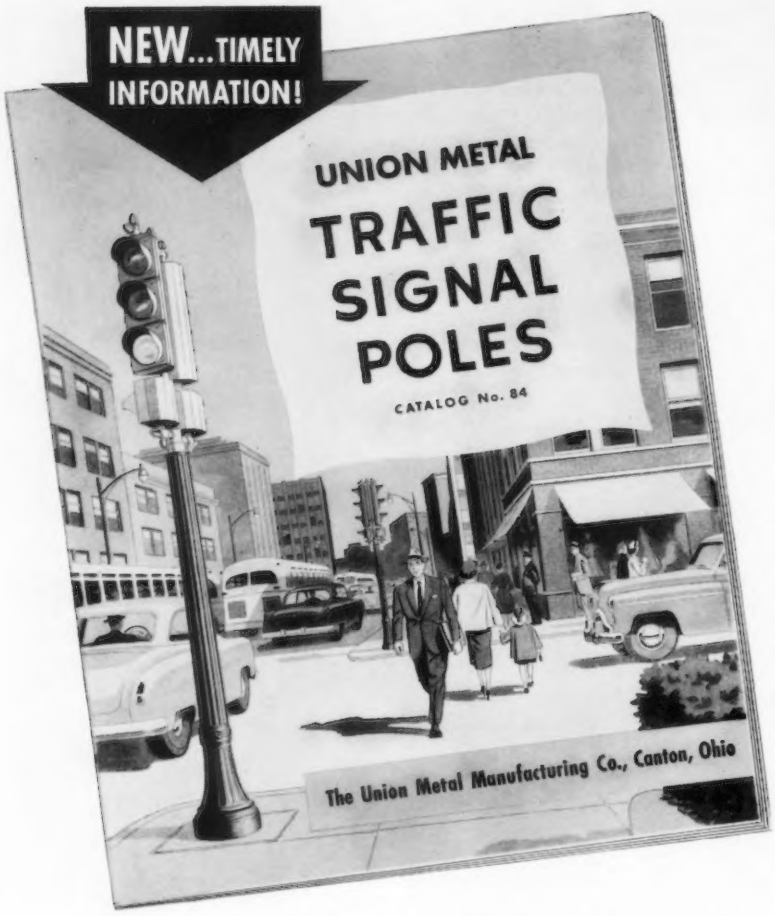

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Winter Driving Tests Completed

The 1955 Winter Driving Tests of the Committee on Winter Driving Hazards, sponsored by the National Safety Council, were completed early in February.

For more than two weeks, 65 engineers, manufacturers, representatives, and test drivers worked on the frozen surface of Pine Lake, near Clintonville, Wisconsin, to obtain factual information to help the public in driving during wintertime.

The major emphasis of the tests this year was the investigation of braking, traction and cornering of winter type tires and chains for passenger cars on ice and snow. Tires submitted included 31 different types in each of two sizes —6.70 x 15 and 8.00 x 15. Other portions of the testing program included a continuation of the restrained cornering tests — "Operation Maypole" — and the Driver Technique Study for tractor semi-trailer combinations. Fringe tests included investigation of the effects of tire pressure variations, bleach solutions and pumping of power brakes.

The tremendous task of analyzing and interpreting the thousands of tests, and preparation of a report is now underway. However, it is not expected that results will be available for release until next Fall.

Ralph A. Moyer (Mem., ITE) of the University of California, is Chairman of the Committee on Winter Driving Hazards. Other members of the ITE participating in the test program and other activities of the Committee include William G. Eliot, 3d, David M. Baldwin, Ralph H. Sprungman, Wayne N. Volk, and Ross W. Wilcox. Stanley T. Siegel, (Assoc. Mem., ITE) of the National Safety Council, is Secretary of the Committee and acted as coordinator of the test program.

UNC Announces Assistantships

The Department of City and Regional Planning of the University of North Carolina, Chapel Hill, announces assistantships for 1955-56, available for candidates for the master's degree. Several assistantships will be awarded carrying stipends ranging from $800 to $1200. Applications must be received by May 1, 1955. Apply to Department of City and Regional Planning, University of North Carolina, Chapel Hill, N. C.

SECTION NEWS

INDIANA SECTION

The winter quarterly meeting of the Indiana Section was held in the State Library Building, Indianapolis, Indiana, on Thursday morning, December 2, 1954, with President JAMES T. WHITE presiding. Thirteen members and one guest were present.

The meeting was opened by President WHITE and the minutes of the fall quarterly meeting were approved as previously distributed to the membership. The treasurer reported that 16 members and 15 affiliates had paid their dues.

President WHITE and Messrs. RICE, POHLKOTTE, and MILNER reported on the Kansas City Annual Meeting. It was the general feeling that the short discussion type meetings were very good but the practice of simultaneous meetings was bad.

It was moved by Mr. RICE and seconded by Mr. STUCKEY that the Indiana Section advise the Committee on Technical Sessions that the Kansas City practice of having may brief discussions of papers (rather than a few prolonged presentations) is desirable and should be continued. However, the practice of having simultaneous sessions should be discouraged because of the conflicting interest of most traffic engineers. Motion passed unanimously.

Section participation in the 41st Annual Purdue Road School, scheduled for April 11-14, 1955, was discussed. Suggested as general session speakers were Indiana Section member HALLIE L. MYERS (tentative topic—New Indiana Traffic Legislation and the Purpose of the Indiana Traffic Safety Foundation, Inc.); ITE National President HARRY PORTER (tentative topic—Inter-Relationship of Traffic Engineering Functions on Various Levels of Government); and WILBUR S. SMITH (tentative topic—In-Service Traffic Engineering Training or Indiana Toll Road Studies).

President WHITE appointed the following committees:

Nomination Committee:
WILLIAM F. MILNER, Chairman
JOHN CAMARDY
FRANK S. VUKOVITS

Program Committee:
DONALD BARRY, Chairman
KENNETH FIELDS
GEORGE REYMAN

The nominating committee will nominate candidates for the election of Section officers which will be held at the Annual Meeting on Thursday morning, April 14, 1955, during the Purdue Road School. The program committee will arrange the program of the two traffic engineering sessions of the Road School.

JOHN E. BAERWALD
Secretary-Treasurer

MIDWEST SECTION

Clipped from January Midwest Items

Olmstead New President

Principal business of the Annual Meeting held on December 16, 1954, was the election of Section officers. Following were the successful candidates:

President—Evan E. Olmstead.
Vice-President—Ralph F. Michel.
Secretary - Treasurer—Geo. F. Hagenauer.
Director (two-year term)—John W. Zimmerman.
Director (full term)—Gordon G. Lindquist.

Newly-elected officers will be installed at the Fourth Annual Ladies' Night and Banquet.

Engineering Open House

The Student Chapter of the ITE at the University of Illinois is working in conjunction with the Highway Exhibit Committee in setting up an exhibit to be shown during the Annual Engineering Open House, March 11 and 12. The purpose of the exhibit is to inform the public of the significance of highway and traffic engineering in highway development. This will be done by the use of demonstration models and posters which exemplify the principles of planning, design, construction and safety. Various reports and displays have also been graciously loaned by professional organizations to aid the exhibit.

The Student Chapter would like to take this opportunity to extend an invitation to all parent members located in the vicinity to attend our Open House.

GEORGE MARASOVICH
Vice-President, Student Chapter ITE, University of Illinois.

This item intended for last month's issue, did not reach us until February 25th.—ED'TOR.

Thirty-fourth Highway Research Board Meeting

Photographs of a few of the ITE members who participated in the Traffic and Operations Department sessions of the thirty-fourth HRB meeting in Washington, January 11-14. Photographs by Ed Mueller.

(Left) Thomas E. Young, Assistant Traffic Engineer, Cincinnati, Ohio, presented the paper, "Analysis of Flow on an Urban Thoroughfare Traffic Control Project," which he and his associate, Roy H. Fielding, also an Assistant Traffic Engineer for Cincinnati, co-authored.

(Right) Dr. Bruce D. Greenshields, Research Associate, Yale Bureau of Highway Traffic, and Professor, George Washington University, gave a paper on his recent research, "A Proposed Measure of the Quality of Traffic Transmission."

(Left) Alan M. Voorhees, of the Automotive Safety Foundation, presented the paper, "Shopping and Travel Patterns," which he had prepared jointly with Gordon B. Sharp and Joseph T. Stegmaier, of the Bureau of Public Roads.

(Right) Richard M. Bartle, University of California, ITTE, presented a paper, "An Investigation of Starting Delay and the Spacing of Vehicles Entering a Signalized Intersection with Suggested Application to Intersection Capacity," which he had prepared jointly with Val Skoro and D. L. Gerlough of the Institute of Transportation and Traffic Engineering.

(Left) An interesting resume of some of his recent Origin and Destination research was presented by F. Houston Wynn, formerly of the Yale Bureau of Highway Traffic, now with Wilbur Smith & Associates. The paper's title was "Intra-City Traffic Movements."

(Right) Warren T. Adams, Capital Transit Company, Washington, D. C., discussed "Five Minute Cluster Sampling for Determining Urban Traffic Volumes."

(Left) Robert B. Campbell, Assistant Traffic Engineer, Ontario Department of Highways, Toronto, Canada, was an interested listener throughout the week.

(Right) George W. Howie, Traffic Engineer of Cincinnati, presided at the Wednesday afternoon session on Urban Transportation.

Walter A. Barry, of De Leuw, Cather & Company, presented a paper, "Allocation of Traffic to the Hampton Roads Bridge and Tunnel System," prepared in collaboration with Marshall M. Rich, of Wilbur Smith & Associates.

OBITUARY

Charles F. Buxton, Assistant Traffic Engineer, Colorado State Highway Department, died February 20th at Denver's St. Joseph's Hospital following a very brief illness.

Known to friends and associates as "Doc," he had devoted most of his life to the business of highway and traffic engineering and to its several allied phases. 1955 marked his 22nd year of service to the State of Colorado and his 20th year with the Highway Department, including four years of military service during World War II.

A resident of Colorado all his life, he was born in Leadville on September 27, 1907. He graduated from Denver's Manual High School and attended the University of Denver. His formal education was augmented by special courses in accident records and traffic engineering taken at the University of Michigan, and by numerous Army training courses in traffic and transportation.

Mr. Buxton's background was as varied and well rounded as one might find in his profession. His experience extended into the fields of public utilities, motor vehicle administration, traffic law enforcement, highway planning and economics, traffic engineering, and highway safety. He started his career with the state as a Patrolman and Inspector in the Motor Vehicle Department, and the following year was appointed Deputy Sheriff for Grand County, transferring to the Highway Department in 1935. In 1948 on special assignment from the Chief Engineer he fostered the growth and early development of the present Colorado Highway Safety Council.

His military service was as conspicuous as his civil service. During World War II he rose from the rank of Private to Major, serving overseas in the Philippines as a motor transportation officer. Maintaining active reserve status after the war, he was promoted in 1949 to Lieutenant Colonel.

Mr. Buxton was a member of the Colorado Society of Engineers and a recently elected Associate Member of the Institute of Traffic Engineers.

He is survived by two brothers, William and Gerald Buxton.

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L. E. Wallace Retires

After 17 years of energetic service to the National Safety Council and its traffic safety programs, Lew E. Wallace recently retired from the Council staff.

Born in Sigourney, Iowa, he was superintendent of motor vehicles for Iowa from 1933 and was nationally recognized in traffic safety work. He was credited with improving Iowa's traffic legislation,

Lew E. Wallace

putting teeth into the driver license law. He also created the agency which became the Iowa Highway Patrol, and was one of the organizers of the American Association of Motor Vehicle Administrators, serving as its first secretary and later as president.

In 1937 he joined the National Safety Council to work with state traffic departments as part of the expanded traffic program started in 1936. Later he was made an assistant to the president of the National Safety Council.

In 1945 he became director of the national Traffic Safety Contest for states and cities which in 1948 became the Annual Inventory of Traffic Safety Activities. It is now generally recognized as the basic program on which many other traffic safety efforts depend. Mr. Wallace has also been in charge of the "Signs of Life" highway-railroad crossing program.

When pressed for his plans for the future, Mr. Wallace referred to a statement he made some years ago: "When I retire I'm going to do nothing—nothing, that is, except enjoy my grandchildren and garden a little."

Miscellanea

Apologies to the many(?) readers of the Miscellanea column for its omission during recent issues. This popular (?) feature, originated by the redoubtable Sam Nowell last summer, had to be deferred because of the work load occasioned by the Annual Meeting, Board of Direction meetings, Thanksgiving, Christmas, New Year's, holidays, year end book closing, Auditors, etc. Although we have collected a lot of items, we simply have not had time to write them up.

Speaking of Sam, we had a long communique from him in December. He is now in the Transportation Corps School at Fort Eustis, Virginia. Private Nowell is working in a four-man office with three Majors on the preparation of a textbook of military traffic handling. He and his lovely wife, Libby, have an apartment in Yorktown, Virginia. Letters to the Yorktown post office will reach him.

Well, it has finally happened. One of the best tools of the traffic engineer has been sandbagged by those it was designed to protect. The users are in open rebellion! At the principal intersection of one of the Florida cities recently a small group of pedestrians forced their way through the vehicles moving with the signal. Bystanders applauded and and joined in the scramble system stopping all vehicular traffic regardless of the changing signal cycles. No cars moved for forty minutes in spite of the police taking over, waving night sticks and blowing whistles. Finally called reinforcements to forcibly restrain joyously scrambling pedestrians. The noise abatement society couldn't make themselves heard over the din of the shrieking horns and irate motorists, or so said the AP wires.

Does any reader (?) and/or readers (?) remember a skit which appeared in the Miscellanea column last August, "I Have Chosen My Own Epitaph," by Bryan Wilson, and did they get as big a bang out of its humor as the Editor? Well, the writer, Bryan Wilson (Mem., ITE), has a delightful friend who is a Traffic Engineer of a thriving little city. Mr. Wilson, who is rapidly becoming one of my favorite authors, has consented to do a series on his friend's adventures. The first two episodes are in and I am sure that Henry Glausson is destined to become one of our favorite characters.

Henry, who is a well-trained, competent traffic engineer, is continually frustrated by the machinations of the public he serves, the merchants, the City Council, the filling station operators, the parking lot owners, and, in fact, everyone including the public press. Henry plods along collecting his facts, analyzing them and hewing to the technician's line like the real traffic engineer he is, continues to force small improvements in the face of all opposition, only to have his gains wiped out within a few months by the ever-surging tide of growing automobile use. So there is nearly always a public cry abroad "why don't that guy do something" which is never drowned out by the Councilman's "if you try a one-way street in my ward I'll have your head"—but Henry loves his job and his people and is tolerant of the foibles of human nature, so much so that he nearly always consents to fill in for the frantic program Chairman of the Civic Club whose guest speaker failed to show up at the last minute. You will meet Henry on the next page of this issue and can follow his adventures in future issues on the page headed "Wilson's Friend."

The same August issue carrying Mr. Wilson's sketch also had an item copied from the Maryland Motorist entitled "Signal Pioneer Adler Honored" which detailed a commemorative dinner in honor of Charles Adler, Jr. (Affiliate, ITE), who was the inventor of some of the earliest traffic actuated signal equipment. Walter Winchell's column of February 7th said, "Baltimore millionaire, Charles Adler, Jr., threw a party for show folk friends. The ladies found REAL pearls in each oyster." Nice to know that one traffc engineer at least has made his pile.

John Hanna, Traffic Engineer for the City of Richmond, has been promoted upstairs to Assistant Director of the Department of Public Safety. He will assist Bill Groth, newly appointed Director, in managing the activities of the Bureaus of Traffic Engineering, Police Department, Fire Department, Weights and Measures, Building Inspection, and Electrical Inspection. John's principal assistant, Ernest Perkins, since Marshall McReynolds went into business for himself, was named Acting Traffic Engineer.

FAN MAIL OF A TRAFFIC ENGINEER

By Bryan Wilson (Mem., ITE)
Wisconsin Division AAA, Madison, Wisconsin

Fan mail is usually thought of as the stream of laudatory and idolatrous letters that overflow the desks of handsome actors having the romantic lead in movie thrillers. Still, men in other walks of life also receive fan mail.

Take the case of Henry Glausson, traffic engineer of Mule's Head, population, 73,000. Henry is in no sense romantic-appearing. He could walk right by a group of co-eds dying for a thrill and never get even a whistle. Not even an amorous glance from the plain, fat girl in the group who, the Lord knows, is not too particular. The truth is that Henry is a small, plain man not calculated to arouse mating instinct. Nature, in dealing out good looks to Henry, was so niggardly as to be almost insolent.

In the battle between the frontal hairline and the forehead, Henry's hair had apparently never heard the aggressive words of the great French general: "Attack! Attack! Always attack!" It had retreated in fairly good order up the parabola of his head until the maximum ordinate was attained, whereupon it fled ignominiously down to the nape of the neck. To be frank, Henry was bald.

Henry's paunch protruded rather pointedly—not quite sharp enough for a hyperbola, but more on the order of a caternary curve rotated to a vertical position. He walked with the indifferent gait of an emaciated cow whose pendulous, heavy udder was underslung to such a degree as to be off-center both laterally and tangentially. As Henry walked around the central business district it was noticed that he had the queer habit of stopping at each intersection to watch motorists and pedestrians fight it out. At such times, if at all, Henry's face really comes alive. His sandy, short-cropped moustache twitches with the sinuous grace of the tip of the jauguar's tail just prior to the animal's death leap.

In short, Henry is a typical traffic engineer unhappily, but irrevocably, wedded to his profession. True, this union has produced no issue. In fact, certain hostile Councilmen and the Planning Engineer have even laughlingly wondered whether such a biological process as issue is possible to one of Henry's profession. Of course, the Planning Engineer is an architect and the hostile Councilmen low ward-heelers.

Henry, however, despite his apparently colorless personality, still manages to make his presence felt in certain quarters, as witness his fan mail. Almost every morning, as he enters the little cubby hole of his office, situated on an alley just to the rear of the Planning Engineer's sumptuous, three-room suite, Henry finds a neat little pile of letters on his blotting pad. Most of these letters are highly personalized by being hand-addressed, with the exception of Joe Prismo's.

Chirography interests Henry who, like most traffic engineers, is a passive philosopher. The handwriting on the envelopes ranges from the vigorous scrawl of the Junior Chamber of Commerce member through the rounded comfortable lettering of the young mother to the tremulous scratching of the oldest inhabitant.

Let's peek at the first letter he opens:
"Dear Mr. Glausson:

I wish to compliment the Police Department on its fine work in moving traffic to and from Saturday's football game. There was no traffic jam or bottleneck at any intersection throughout the city. Such fine traffic planning on the part of the Police deserves special commendation.

Very truly yours,
J. A. Huexmueller"

Here's another, signed "Anxius PTA mama":

"City traffick eng. I am mama to 3 littul ones crosing preston st 4 times to schul everday. you wan make this st oneway. you no oneway sts are speed-traks. bad nuff for raze chillun to be drafed an sent over sea to get kill. you wan kill them by speed manacks for they ole nuff to be drafed by army. our lord will punish you. see skripturs about fools.

Anxius PTA mama"

This one seems to strike a constructive note:
"Dear Mr. Glausson:

You are fairly new to this city and apparently have not thoroughly studied a traffic plan presented to the city twenty-five years ago by a firm of famous traffic consultants. This logical traffic plan cost the city (taxpayers) $30,-000.00. And what did our dishonest city officials do with it? Placed it on top of a cupboard where it has been gathering dust these many years. Why? Because these officials are either dumb or manipulative. Perhaps both.

Now, I read that you are reviving a plan by our not too intelligent planning engineer who seems to have won you to his side. I am giving you the benefit of doubt in not questioning your honesty. However, the way in which you have so readilly fallen in the trap of certain questionable city officials causes me to doubt your intelligence.

Drop at once this silly idea of widening Foster Street. Such widening would entail the destruction of 89 fine elm trees set out before the Civil War by my grandfather, one of the earliest settlers of this city, and later a Captain in the Union forces. My esteemed grandmother was very proud of these trees and watered them with her own hands during douths. She was the author of many fine poems which appeared in the local paper.

These trees form an arch over Foster Street and resemble the nave of a fine cathedral. If you remove these trees just to widen a street which is wide enough already this act of vandalism will cause all honest people to assemble in a public hearing to demand your immediate removal.

Very truly yours,
(Colonel, honorary) A. Taxpaper"

Ah, here's one in a beautiful hand undoubtedly feminine:
"Dear Henry:

About all poor little me knows about traffic is the white slave kind, but you sound about my speed and I would simply adore meeting you and listen to all those big words I read of you throwing to the reporters. I must be a poet at heart for I simply dote on phrases like 'terminal facilities' and 'mass transit operations'. Slip down some time

soon and let's get better acquainted over a few bottles of beer. What say, handsome?

Ask for Lula, Apt. 3B,
1309 S. Ukraine Ave."

Well! The character that wrote this must be forceful. Look at the broad lettering and the waste of ink. The paper is pierced by the pressure of the pen point. Undoubtedly violently masculine. No heading.

"You call yourself a traffic engineer? Phooey!! You wouldn't make a wart on a good traffic engineer's neck! I don't like you! Wanna make something of it?

Slugger, Ray's Gym"

Another for our hero:

"City Traffic Engineer:

You should be ashamed of contributing to juvenile delinquency! Sunday night, my daughter had date and he drove absently down the one-way street that deadends in Bogg's woods. Her date said there were no parallel streets on either side of this one-way street and he couldn't get back to town. They stayed there all night and walked back the next morning. Poor kids. You should be hung.

Mrs. Augie Biefieurst"

Comes the very last note:

"Dear Mr. Glausson:

It was so sweet and thoughtful of you to put up the stop sign at First & Angola. I have importuned the city for years for this simple life-saving device and at last you have fulfilled my request. I have always argued that the Police were incompetent as traffic engineers. I am so thankful that we are now in the hands of a real traffic expert. I am sure you will take care of all our needs!

With love,
(Miss) Angela Singleheart
212 Second Street,
Allison Hotel for Ladies"

Henry places the letters in his complaint files with misty eyes. His shoulders straighten. It is a good feeling to be appreciated, he thought. Such civic interest on the part of the public was his visible evidence of work well thought out and efficiently put into operation.

If, at times of despondency, Henry had sometimes wondered whether perhaps the town had been named after the wrong end of the mule, he now repented. Mule's Head was a fine friendly city filled with understanding people. It was his town and by George he loved it!

He got up and walked briskly out the door on the way to the sign shop to begin his beloved work.

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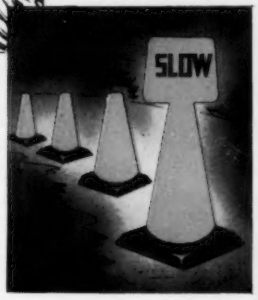

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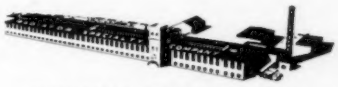

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Rothrock Wins Best Paper Award

Claude A. Rothrock (Mem., ITE) received the Highway Research Board Award for the best paper given at 1954 meeting. The presentation was made at the opening session of the 34th Annual Meeting in the Academy of Science Building Auditorium, January 11, 1955, in Washington.

Mr. Rothrock's winning paper presented in early 1954, under the sponsorship of HRB's Department of Traffic and Operations, was entitled "Urban Congestion Index Principles," and suggested some possible methods of developing means of comparing the degree of congestion on city streets. Urban Congestion Index Principles, with its related discussion and another paper presented at the same time—"Economic Costs of Traffic Congestion," by John W. Gibbons and Albert Proctor, were published last year as Highway Research Board Bulletin 68 under title of "Urban Traffic Congestion."

Writing prize winning papers is an old story to Rothrock, who has been State Planning Engineer for the State Road Commission of West Virginia since 1946. Two years ago he won a

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half-year's salary for the essay that placed third in the well remembered $194,000 Better Highways Award contest sponsored by the General Motors Corporation in early 1953. That paper was published in August 1953 by TRAFFIC ENGINEERING.

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Executive capacity and the ability to collaborate with officials of public utilities, police department, other civic officials, and the general public are essential.

State salary expected on the basis of traffic engineering experience, in written application to

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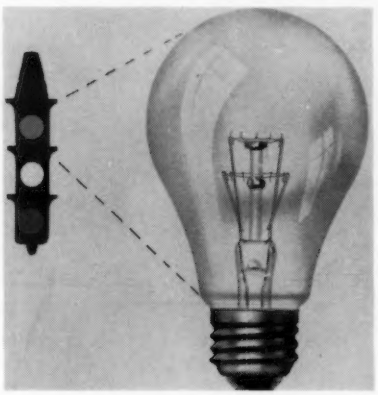
New Traffic Signal Bulb

Solar Electric Corporation of Warren, Pennsylvania, has produced an electric light bulb with a built-in safety device designed to prevent accidents at road intersections, railroad crossings, bridges, airports, etc.



The lamp in question (Dual Traffic Signal) contains two filaments. A 50-watt filament designed for 5,000 hours life and a 25-watt filament designed for 8,000 hours.

When the 50-watt filament burns out after 5,000 hours, the 25-watt filament continues to burn with a lower light. This light is sufficient to give a warning to the public, but dim enough to warn the Police Patrol or Maintenance Department that the lamp needs replacing.

The two-filament design is a new departure in the lighting field and the light bulb has a life of almost twice that given by lamps presently in use.

The 75-watt Dual Traffic Signal lamp has a medium base, is enclosed in an A-21 bulb and may be used in any position.

German Diesel Expert Visits USA

Dr. Eugen Diesel, son of the famous Rudolf Diesel, inventor of the oil engine that bears his name, recently visited the United States as a guest of the State Department. Dr. Diesel stopped off for a short stay in this country while enroute to his native Germany, concluding a four months' tour of diesel factories in the Far East and elsewhere in the world.

Shortly after his arrival here, the eminent German visitor attended a ceremony in Philadelphia where he presented one of his father's original manuscripts to the Franklin Institute. An historical document in the field of power production, this manuscript is in Dr. Rudolf Diesel's handwriting and outlines his early ideas concerning the application of the diesel engine to railroad locomotives.

During his visit in this country, Dr. Diesel flew to Peoria, Ill., to tour the huge Caterpillar Tractor Co. plant, one of the world's largest manufacturers of diesel engines. Here he inspected the also made a trip to Caterpillar's proving ground area to witness huge diesel-powered earth-moving equipment in action.

Dr. Diesel feels that great strides have been made in the progress of the diesel engine since the introduction of that prime mover to the United States at the turn of the century. The eminent visitor stated that this country had far surpassed the rest of the world in the use of diesel intricate manufacturing processes involved in the production of the latest models of his father's invention. The son of the famous diesel engine inventor power and cited as an interesting example the fact that in 1953 not one steam locomotive was ordered for use in the United States. This, he stated, definitely brings to a close the age of steam on the railroad.

While the United States has the largest diesel engine factories in the world—the result of superior organization, machine tools, wealth, materials and working conditions—Dr. Diesel pointed out that other countries were fast improving in the production of the diesel engine. He mentioned that Japan is now manufacturing a very small diesel engine that produces as little as one horsepower. A single factory is turning out an average of 400 of these engines per day and shipping them to undeveloped areas for farm and road building activities.

Dr. Diesel is a noted writer, scientist and publisher in Germany. Several books he has written include: "Germany and the German People," a history of the German people; "Struggle About A Machine," telling of the introduction of the diesel engine to the United States; and "Diesel," a story of the development of the diesel engine. He also has written numerous articles for magazines.

Summer Program for Highway Engineering Instructors Announced

An 8-week summer program of advanced study in highway engineering, open to instructors in engineering colleges, will be held at the University of California, Berkeley, beginning June 20, 1955, with the cooperation of the Institute of Transportation and Traffic Engineering. Twenty grants-in-aid of $650 each are available to make practicable the enrollment of instructors from throughout the United States. This financial assistance has been made possible by a grant from the Automotive Safety Foundation.

The program will consist of two 3-unit graduate courses and seven seminar sessions with specialists in different phases of highway transportation participating.

The two courses carrying graduate credit are Highway Planning and Economics, to be conducted by R. A. Moyer, Institute research engineer and former chairman of the Highway Research Board; and Advanced Traffic Engineering, to be conducted by D. S. Berry, assistant director of the Institute.

Tentative seminar subjects are: (1) geometric design of rural highways and expressways; (2) freeway programs and programming; (3) highway finance and administration; (4) pavement design; (5) urban transportation; (6) methods of teaching highway engineering (7) visual aids and demonstrations. A three-day field trip to the Los Angeles area is being planned as part of the program.

(Continued on page 252)

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C. C. Wiley Traveling Award in Highway Engineering Announced

An Illinois highway contractor has provided funds which will permit granting an annual award of $1200 to a senior student in highway engineering at the University of Illinois for travel in the United States to study and report upon highway design and construction as carried out by the various states. The award has been named in honor of Professor C. C. Wiley (Hon. Mem., ITE), nationally recognized highway engineer who retired at Illinois in 1952 after 46 years on the staff.

The award is to be based principally upon the excellence of a design project carried out by students in the senior highway design course in the Department of Civil Engineering, with some consideration being given to scholastic standing and demonstrated interest and ability to profit from the travel proposed. The winner is to be selected and the award administered by a committee of five persons, three to be staff members of the College of Engineering of the University of Illinois and two to be alumni of the University of Illinois.

The winner of the award shall travel, probably by automobile for a 2½ to 3 months' period during the summer after receiving the award. He is to visit state highway departments and highway construction projects, interviewing persons in charge and noting the outstanding features and difficult problems of design and construction. He shall submit an informal report to each member of the committee monthly and a final and complete written report at the termination of the travel. One hundred dollars of the award money shall be withheld until the final report is submitted. Approximately one hundred dollars of the award money shall be used for photographs of the projects visited and these photographs shall become the property of the Department of Civil Engineering for instructional purposes. The travel shall cover the major areas of the United States—Midwest, West, South and East—inasfar as time will permit.

Highway transportation is a major industry in the United States today. Billions of dollars are going to be expended in the next few years to provide the highways and streets needed for safe and convenient travel. A primary problem in this construction program is how to secure the services of an adequate number of competent highway engineers to assure effective use of the money to be made available. More capable young engineers must become interested in the opportunities in highway engineering as a career. This Traveling Award may serve to stimulate interest and to provide an appreciation of our national highway situation for a few young men with the result that they will devote their abilities and add their breadth of view to the solution of our highway problems.

The first of these Traveling Awards will be granted in June of 1955.

SUMMER PROGRAM FOR HIGHWAY ENGINEERING INSTRUCTORS ANNOUNCED

(Continued from page 251)

Tuition for the program will be $75 (G. I. benefits may be used). Applications for grants-in-aid should be submitted by April. Forms and further information may be obtained from the Institute of Transportation and Traffic Engineering, University of California, Berkeley 4, Calif.

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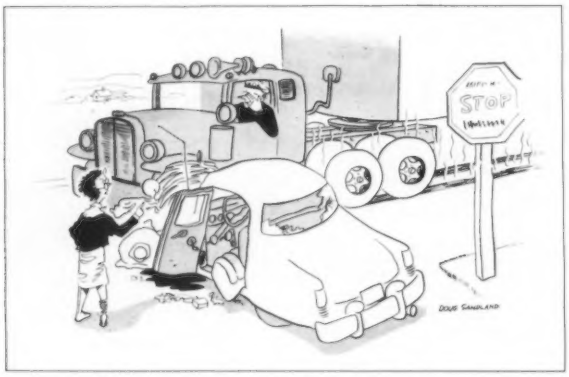

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Yearbook Changes

ADAMS, George S. (Junior)
Assistant Traffic Engineer, State Road Department of Florida. SEND MAIL: 1510 Atkamire Drive, Tallahassee, Florida.

BATES, Russell G. (Associate)
Parsons, Brinckerhoff, Hall & Macdonald, 724 E. Mason Street, Milwaukee, Wisconsin.

CRAWFORD, Glenn A. (Associate)
City Engineer, City of Pomona. SEND MAIL: 2846 Sumner Avenue, Pomona, California.

DeNOBLE, Henry M. (Junior)
Director of Planning & Traffic, City Hall, Springfield, Missouri.

DRAKE, Gerard L. (Junior)
Wilbur Smith & Associates, 265 Church Street, New Haven, Connecticut. SEND MAIL: White Hollow Road, Northford, Connecticut.

EWENS, W. E. (Associate)
Morrison Road, R. R. #2, Oakville, Ontario, Canada.

GROTH, W. L. (Affiliate)
Director of Public Safety, City Hall Annex, Richmond, Virginia.

HALDERMAN, Lee G. (Junior)
Assistant Highway Engineer, California Division of Highways, District VI, P. O. Box 1352, Fresno, California.

KENEIPP, J. Marshall (Junior)
Associated Consultants, 415 Church Street, Evanston, Illinois.

KENNEDY, G. Donald (Member)
President, Portland Cement Association, 33 West Grand Avenue, Chicago 10, Illinois.

LEONARD, H. Jack (Associate)
Project Engineer, Edwards, Kelcey & Beck, Newark, New Jersey. SEND MAIL: 21 Willow Court, Shrewsbury, New Jersey.

MATYAS, Curt A. (Junior)
Division of Highways, District 5, 50 Higuera Street. SEND MAIL: 320 Tassagara, San Luis Obispo, California.

McCARTHY, Edward J. (Member)
Highway Traffic Engineer, Massachusetts Dept. of Public Works. SEND MAIL: Apartment 607, 145 Pinckney Street, Boston, Massachusetts.

NAGEL, John T. (Associate)
Cook County Highway Department of Chicago. SEND MAIL: 2617 120th Place, Blue Island, Illinois.

RAFF, Morton S. (Junior)
Mathematician, Traffic Operations Section, Bureau of Public Roads, Washington, D. C. SEND MAIL: 708 Boundary Avenue, Silver Spring, Maryland.

ROBINSON, Carlton C. (Associate)
Automotive Safety Foundation, 200 Ring Building, 1200 Eighteenth Street, N. W., Washington 6, D. C.

SULLIVAN, Charles R. (Associate)
4645- 5th Street South, Arlington 4, Virginia.

SUTCLIFFE, E. D. (Associate)
Executive Assistant to the General Manager of Transportation, The B. C. Electric Railway Company, Ltd., Oakridge Transit Centre, Vancouver 4, British Columbia.

WHITE, Frank T. (Junior)
Assistant Highway Engineer, California Division of Highways, San Francisco, California. SEND MAIL: 6615 Dana Street, Oakland 9, California.

WRAY, Robert M. (Member)
Assistant Director, Division of Traffic, Kentucky Department of Highways, Frankfort, Kentucky.

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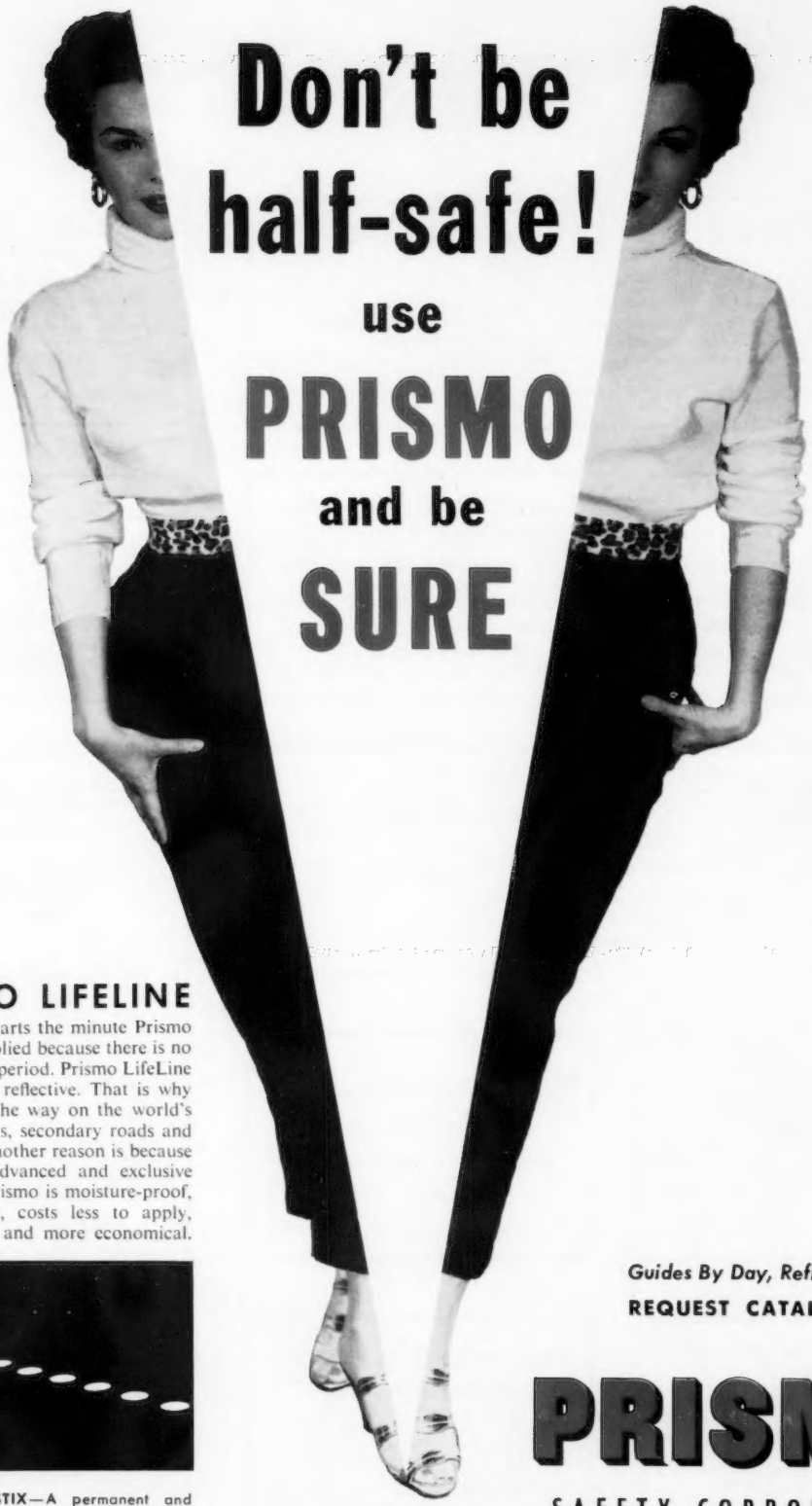

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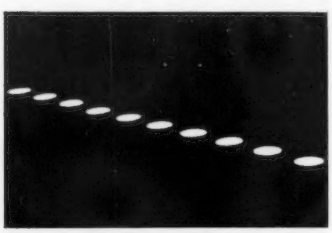

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